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MOVABLE KIDNEY.

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A movable kidney is one which changes position behind the peritoneum. Since Landau, of Berlin, in 1879, first called attention to this abnormal condition, the questions of etiology, diagnosis and treatment have been of the keenest interest to all men engaged in surgical work.

Various degrees of mobility have been noted and classified by different observers, but there seem to be but two of any practical advantage—movable kidneys which develop definite symptoms, requiring treatment, and those which, though movable, produce no symptoms. There seems to be no definite connection between the degree of departure of the kidney from the normal position in the loin and the symptoms developed. A large degree of mobility producing at times no disturbance whatever, while a slight displacement may excite the most violent symptoms.

The kidney is supported in its position by a constant balance between the intra-abdominal pressure and the tension of the abdominal muscles, supplementing various suspensory devices. It, therefore, follows that any lax condition of the abdominal walls or elongation of the suspensory ligaments must predispose the kidney involved to dislocation. Moreover, the recess of trough in which the kidney lies varies in shape and depth. In the male it is deep and funnel-shaped; in the female shallow and more cylindrical. May not this help to explain the fact that 85 per cent. of cases of movable kidney occur in women? Again, the right kidney, with the liver superimposed, is slightly lower than the left, and is in intimate relation in its lower third with the posterior and extraperitoneal portion of the ascending colon. Through this contact with the colon a decided downward pull comes on the right kidney from the forced peristalsis of the loaded bowel during its constant effort to overcome the force of gravity in passing upward its fecal contents. It is, therefore, more than coincidence that causes displacement of the right kidney fifteen times more frequent than that of the left.

We find movable kidneys more often in women of thirty to forty years of age, who have done hard physical work and have had many children. There are certain physical characteristics which play a very important part in predisposing to displacement of the kidney; namely, any physical abnormality which may tend to flatten and make shallow the normal paravertebral fossae. This explains the fact that palpable kidneys are found almost always in long-waisted, slender-bodied women.

Moreover, the transient hyperemia which occurs during menstruation loosens the kidneys' fascial attachments and may be a predisposing cause. Tight lacing cannot be an important contributing factor, as Samoan and Egyptian women who have never known corsets, present a large percentage of palpable kidneys.

Harris presents his conclusions as follows:

1.—The essential cause of movable kidney lies in a particular body shape.

2.—The chief characteristics of the body form are a marked contraction of the lower end of the middle zone of the body with a diminution of the capacity of this portion of the body cavity.

3.—The diminution of capacity depresses the kidney so that the constricted outlet of the zone comes above the center of the organ and all acts, such as coughing, straining, lifting, flexions of the body, etc., which tend to adduct the lower ribs, press on the upper pole of the kidney and carry it still further downward.

4.—It is the long-continued repetition, in a suitable body form, of these influences, which collectively may be called internal trauma, that gradually produces a movable kidney.

External trauma, violent muscular effort in a constrained position or during labor, are apt to result in a displacement of the kidneys.

Mrs. H., housewife, thirty-five, gives a history of administration, by midwife at last confinement, four years before, of considerable ergot to stimulate her pains, which were weak and ineffective. Pains became extremely forcible, so strong as to

alarm her attendant. During one of the most violent efforts she felt something "tear in her side." Soon after getting up from her confinement she consulted her physician, who found a movable kidney. She had a high fixation done by lumbar route, but displaced her kidney again during a miscarriage sixteen months after fixation.

The symptoms produced by a movable kidney vary a great deal. Your trainman may tell you that he cannot ride his train unless standing up, a sitting position while the train is in motion producing great pain in his back. His pain may, however, simulate gall-bladder trouble, or even an acute appendicitis; indeed, he may have the disease as a complication, caused by compression of the mesenteric vessels by the movable kidney. Edebohls states that 60 per cent. of movable kidney cases have more or less trouble with the appendix. I am inclined to believe that his estimate is very conservative.

Your maid of all work may be unable to complete her accustomed duties on account of severe colic, intense pain in her side, or an intractable cystitis. In short, the pain of a movable kidney, which may be colicky, burning or dragging, constant or intermittent, may be referred to almost any of the viscera. Patients suffering from a displaced kidney are usually subject to peculiar attacks—cramp-like seizures—called Dittl's crises. Such an attack is marked by sudden pain, increasing in severity, nausea, perhaps vomiting. There may be chills, with small pulse, collapse or a high temperature. The kidney is extremely sensitive, and if examined early in the attack may appear as a rounded tumor larger than normal. The abdominal tenderness and distension may be so excessive as to simulate peritonitis. The urine is always diminished in quantity. Hemaglobinuria, albuminuria, and oxaluria are common. Both hyaline and granular casts are not unusual, the urine at times presenting a perfect picture of acute nephritis. Pus is found at times; this, as well as the other urinary abnormalities, depending upon the degree and permanence of the interference with the blood supply. The attack passess off as suddenly as it began—sometimes after a few hours, more often only after days—its termination usually marked by a copious discharge of urine. This, however, is not what has been often called an hysterical urine, but the discharge of a hydronephrosis caused by a kinking and consequent obstruction of the ureter and renal vessels. The gradual increasing curvature and obstruction of the ureter has a marked effect upon the secreting force of the kidney, diminishing the secretion as the obstruction progresses until in extreme cases atrophy or cystic degeneration of the kidney may result. (Hall: *Journal Obstetrics and Gynecology*, 1904.)

It is very probable that many of the so-called hematogenous kidneys—those kidneys infected with the colon bacillus, may have been originally movable kidneys. It is an established fact that the colon bacillus does enter the kidney through the renal artery and the conditions present in both intestinal and urinary tract in these cases of displaced kidneys are much more likely to promote rather than inhibit such an infection. In fact, I believe that the investigations of Dr. Brewer tend to prove that this does take place.

Our case histories show "conclusively that the attacks are by no means all of them hysterical, and that we are dealing with an acute disturbance which can be easily mistaken for a beginning appendicitis or for an acute inflammatory attack of the gall-bladder." (W. M. Conant; Plea for Fixation of Kidney.) Icterus may be a prominent symptom in these cases, caused by direct tension upon the duodenum or obstruction of the gall-ducts by pressure of the displaced kidney. This occasionally results in a cholecystitis which, after a time, may become chronic, and the development of calculi very probable. I had the pleasure of seeing just such a case some time ago come to operation. In this instance the train of symptoms extending over some five years showed a gradual development from what was unquestionably a simple movable kidney, through slight recurrent attacks of jaundice, gradually increasing in frequency and severity until the removal from the gall-bladder of a number of good-sized stones terminated the trouble. The position of the kidney at the time of operation, together with the testimony of the well-trained observers who had seen the patient early in her trouble, seemed to prove conclusively that the displaced kidney had been the most potent factor in the production of the gall-bladder mischief.

Tinkham (*Journal A. M. A.*, July, 1907) reports two cases of unmistakable gall-bladder trouble relieved by fixation of displaced kidneys which were pressing on the bile ducts.

Most sufferers from displaced kidney are subject to digestive troubles, depression of spirits, neurasthenia, or hysterical attacks. In fact, it is difficult at times to determine whether the movable kidney is a cause or a coincidence.

The abnormally located kidney is usually easily recognized by bimanual palpation. In thin subjects it is easily palpated, but may be found almost any-

where in the abdomen, its range limited only by the length of its pedicle. The pateroprone position, with the knees a little more extended than in Sims' position, will at times bring out a movable kidney which cannot be clearly defined with the patient on the back. A standing position, the weight of the body resting on the hands, the body slightly bending forward, is at times of decided advantage. If the patient, standing, will lean a little backwards, the body firmly supported, and bending a little toward the side to be examined, when a deep breath is taken, it is often possible to feel a slightly prolapsed kidney slip from between the examining fingers and thumb grasping the side below the ribs. As the kidney slips away from the hand, most patients will give an exclamation of surprise or pain, showing that they realize that the source of their trouble and the indefinite pain has been reached.

"A movable kidney may be confounded with an accessory hepatic lobe, with cysts of the liver and with gall-bladder enlargements. All tumors of the liver and gall-bladder share the respiratory mobility of these organs, whereas floating kidneys, except they have a long pedicle and a mesentery, have no respiratory mobility. The kidney is usually covered with the colon, which gives tympanic resonance, whereas the gall-bladder and liver lie close to the abdominal wall and the percussion note over them is dull. The most conclusive sign for differentiation lies in the ease with which a movable kidney can be replaced into the loin, which position it furthermore maintains when pressure on it is relaxed, whereas all other tumors and swellings cannot be fully pushed into the loin and on their relaxation at once come out again.

"Tumors of the stomach and colon cannot be fully replaced into the loin, and they afford other clinical evidences that enable us to readily differentiate them from movable kidneys." (Berg: Surgical Diagnosis).

In the Transactions of the American Surgical Association, Keen writes, referring to movable kidney: "The discomforts are very great and the pain may be so excessively severe and prolonged as to interfere with all occupation, and practically to make life almost unendurable. The disorder may pass beyond the realm of bearable evils into serious and actual danger to life itself, so that in considering the slight mortality from nephrorrhaphy, we must also bear in mind that there is a mortality attending the expectant treatment as well."

In the treatment of those cases not requiring active surgical interference, the use of mechanical pressure through pads can be mentioned only to be condemned. These patients do best with a "straight front," long-waisted corset, or so-called belt, according to sex, snugly fitted. If a corset be used, one a size or two smaller than that usually worn gives the best results. These appliances should be adjusted while the patient is in the recumbent position, preferably in the morning before rising, the lower part fastened first and the abdomen pushed well up above the edge of the support.

It is not my purpose to discuss the different methods of kidney fixation which have been in use since Hahn did his first operation in 1881. I wish to say, however, that it is vital to the success of any operation that all of the lesions coexistent with that of the kidney should be investigated and taken care of. To anchor a prolapsed kidney and leave a diseased appendix or gall-bladder, or a lacerated perineum or cervix might be inviting failure.

Some years ago I was enabled through the courtesy of Dr. William M. Conant to see done and to study the operation for kidney fixation originated by him. The simplicity of the operation and its uniformly good and permanent results so appealed to me that I have recommended this procedure in all of my cases requiring operation. In none of the operations done by this method have I derived other than great satisfaction from its use. The incision is a slightly oblique one, starting a little above and behind the anterior superior spine and extending backwards and slightly upwards towards a point a little below the last rib. The incision is carried directly through skin and oblique muscles, cutting the transversalis fascia, if necessary, when blunt dissection very quickly exposes the kidney, the peritoneum being pushed aside, not incised until the operator wishes to explore the cavity of the abdomen proper. "No vessels of any account are divided. No nerves are cut because the incision should lie between the ilio-inguinal and iiio-hypogastric, thus doing away with paralysis of the rectus and other muscles, also doing away with bulging and areas of anesthesia." Another advantage, the operation is done with the patient on the back, avoiding a forced position of the patient and all the disagreeable troubles we so often get with the use of sand-bags and air cushions. "The operation done by this route is more quickly done than by lumbar incision, and as very little blood is lost, there is a lessening of shock. The possibility of mistake in diagnosis can be easily corrected. The kidney, the pelvis of the kidney and the ureter can be easily palpated, and the question whether there is or is not a stone in some part of the urinary tract can be easily determined. Furthermore, the possi-

bility of there being a mistake in diagnosis between movable kidney and gall-stone can also readily be determined by exploration. This is impossible by the lumbar route. As many of these cases in women have trouble at the same time with one or the other ovary, or a possible displacement of the uterus, it is well that the pelvis be gone over carefully." (W. M. Conant: A plea for the Anterior Abdominal Route for Fixation of the Kidney.)

Again, the most skilful operators often fail in attempting to remove a diseased appendix through the lumbar incision; through the incision just described it becomes a very simple matter. Taking into consideration the statistics of Edebohls before noted, it seems to me that any surgeon doing a fixation and neglecting to investigate the condition of the appendix may fall far short of his whole duty to his patient.

The kidney, having been thoroughly separated from its fatty capsule and any possible anterior adhesions, particularly to the colon, is fixed by two kangaroo tendon sutures at the lower part of its paravertebral recess, the lower pole resting just above the crest of the ilium, anchored to the strong fascia "which ties down the psoas and quadratus lumborum and can be felt as a strong ridge." (W. M. Conant.) The sutures are both placed in the lower half of the kidney, about an inch apart, through fibrous capsule into the parenchyma; the intra-abdominal pressure holding up the upper pole while the lower pole is firmly fixed upon its shelf. I can do no better than quote Dr. Conant's description of the mechanism of this result:

"The depth in which the kidney lies between the psoas on one side and the quadratus lumborum on the other side extends to the crest of the ilium, so that the kidney lies in a somewhat contracted trough, which becomes shallow as we get towards the crest. . . . For the purpose of rough demonstration, the position of the somewhat closed palm of the hand may be likened to the trough in which the kidney lies. The upper curve may be said to be the diaphragm; the lower part is the posterior portion of the crest. It will be noticed that if anything is placed in the palm of the hand with the hand in a horizontal position, and then tilt the hand towards the vertical, that the substance in the hand slips out, the lower portion first and the upper portion following. This would be still more true if we remember that the kidney is a little lower than the vessels which go off from it, and that the entrance of the vein and artery is largely in the upper half. The kidney, therefore, when it leaves its position starts with the lower end foremost, in all probability, and tips over.

The upper portion probably never tips over first. . . . If then we place a shelf at the lower end, to continue our illustration, the hand can be brought into a vertical position, so in like manner the kidney can be forced into position without drag or pull. It simply rests on a shelf or pouch. This seems to me to be the sensible method of holding the kidney in position." (W. M. C., *ibid.*)

In the last few cases where I have done this operation I have split the fibrous capsule over practically the entire length of the kidney, the kidney tissue rolling out immediately on incision, showing the increased pressure in the parenchyma. The continued reports of good results of decapsulation in selected cases in which the conditions present were very similar to those found in Dittl's crises, and often between these attacks, led me to believe that a partial decapsulation or at least a splitting of the fibrous capsule would promote relief of the tension and congestion and thus hasten recovery. A series of experiments (upon dogs) satisfied me as to the correctness of my assumption, and I am of the opinion that in two cases at least the capsule splitting was of decided advantage. Moreover, the anastomoses of the small vessels in the thin line of granulation tissue with the vessels in the tissue about the kidney cannot help assisting in making permanent the relief of the congestion always present in these cases.

G. G., male, forty years, farmer, does a little lumbering; weight 180 pounds; always been active and healthy. September, 1898, consulted for pain in right side, persistent, dragging, colicky at times. Has suffered since some time in June, following fall on his side on a peeled log. Has constipation. Long standing or riding increases his pain. Seen first while suffering from an attack of pain, which had lasted then almost twenty-four hours. Abdomen slightly tympanitic, tender especially on right side near umbilicus, where a rounded tumor could be made out, which moved somewhat on pressure. Appendix, movable kidney and gall-bladder considered. Patient was quite yellow and gave a history of varying degrees of jaundice existing for about six weeks. His pain relieved and the attack subsiding, the misplaced kidney was easily made out. Operation was recommended and refused, and much to my surprise, after the use of a snug support for some two or three months, refraining from all violent exertion, with as much rest in the recumbent position as such an active man could be induced to take, his kidney became fixed low down and with the help of an abdominal bandage he gets along well. Since his enforced rest he has had no jaundice. He has no pain now, and with the ex-

ception of constipation is as healthy as he was before his accident. I imagine that the traumatism may have produced conditions which enabled nature to do a fixation herself.

Mrs. K., thirty years of age; two children. Labor five years ago, instrumental. Endometritis, constipation marked, family history negative; history of fall some six years previous; since then has suffered from more or less pain in back, which was attributed to slight dorso-lateral curvature, for which she is now wearing an apparatus with no apparent relief. Palpation shows movable kidney with great range of movement. Spinal brace discarded, but no relief resulting from use of supports for kidney, that organ was anchored by Conant's operation, a diseased appendix being removed at the same time. Recovery uneventful, patient in a few weeks helping about the house. When I last examined her, four years after the fixation, her kidney was in good position, and she was doing the major part of the work in a boarding-house. I am inclined to believe that in this case the dorsal curvature was a factor in lessening the depth of the paravertebral recess.

Mrs. L. H., housewife, thirty-five years of age; weight 120 pounds. One child, three years ago. Skin sallow, muddy; suffers from constipation; does not appear well nourished. Father died from some heart trouble very suddenly while she was in room with him; since this time has been very nervous. Is neurasthenic; has all sorts of symptoms—crises of pain, collapse—in fact, is practically bedridden. Has had two miscarriages in past three years; is suffering from lacerated perineum and endometritis. Right kidney prolapsed to level of umbilicus.

Operation.—Repair of cervix and perineum, with fixation by Conant's operation, with capsule splitting. Good recovery, in bed three weeks. Able to get about quite well, but hypochondriacal and afraid to move about much. Was confined about a year after fixation; labor uneventful. Kidney, six months after confinement, was in good position and apparently causing no symptoms. Patient still, however, markedly neurasthenic. Appendix removed in this case, as it showed diseased condition plainly.

Miss H., school teacher, 24 years of age; weight 110 pounds. Skin sallow; at times quite yellow. Troubled somewhat with insomnia; constipated most of the time. Has suffered for some years from attacks of violent abdominal pain, with tenderness in right iliac and lumbar regions. These attacks were usually accompanied by nausea and vomiting and a rise in temperature. Palpation showed a prolapsed kidney and, as the crises were increasing in severity and frequency, immediate operation was advised. Fixation by Conant's method; appendix removed. Uneventful recovery; out of bed in less than three weeks. Is at this time teaching school and rarely losses a day from illness. She still has at times some digestive disturbance, but her constipation has to a great extent been relieved; now has no jaundice.

Mrs. C., aged 28; has been confined to the bed by pain and general discomfort most of the time since her confinement (primipara), six months before. Gets about for a day or two, but cannot do anything about the house. Has movable right kidney, lacerated cervix and perineum.

Operation.—Repair of cervix and perineum, D. and C., fixation by Conant's method, with capsule splitting. Appendix removed. Out of bed before end of third week and for past three years, as far as I can learn, has been in excellent health.

Miss C. T., aged 28; weight 105 pounds; mill operative; anemic; nervous. Suffered for years from backache and abdominal pain, so extreme at times as to confine her to the bed for weeks. Attacks very irregular. Marked tenderness over McBurney's point; kidney below umbilicus. Operation by Conant's method. Capsule of kidney split, with marked rolling out of parenchyma on incision. Good recovery and still in good condition some two weeks ago. Operation, January, 1908.

Urinalyses were made in all of these cases, but unfortunately the individual data have been lost. My recollection is that transient albumin, with casts at times, was quite uniformly present.

All of these cases presented the same long-waisted, slender-bodied characteristic in greater or less degree, and all had the right kidney displaced. I have never seen but two cases of single left kidney displacement.

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POST-OPERATIVE ILEUS AND PURGATION.

Shock, exhaustion, evisceration, etc., are the customary contributing causes of ileus. In fact we know of no better prescription for the production of ileus than to cause excessive purgation before operation; to make an evisceration and a prolonged operation which includes some handling of the viscera, and finally to begin promptly to purge the patient after patient. Many crimes have been committed in the name of surgery, but to our thinking, the old plan of giving purgatives immediately after abdominal operations is the most infamous.—I. S. STONE in the *Virginia Medical Semi-Monthly*.

ON PULMONARY EMBOLISM AFTER INJECTIONS OF MERCURY—SALICYLATE SUSPENSIONS.

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The possibility of the occurrence of pulmonary embolism is the chief practical objection of importance that has been urged against the treatment of syphilis by the intramuscular injection of insoluble mercurials. If it were inevitable, even in a small proportion of cases it would be a legitimate objection to the method. But it is not inevitable; in fact, and I base my assertion on what is now a large and long experience with the method, it need never occur. We can tell when the needle is in one of the circulatory channels by observing its lumen after implantation and before injecting the fluid.

In a case reported by Eising in the January issue of the AMERICAN JOURNAL OF SURGERY an embolism occurred, though the precaution had been observed. As an advocate and exponent of the method I feel that some comment should be made. And perhaps I can best make it in the shape of some brief account of the practical points in making the test. Though minute; they are of importance; for neglect of any one of them robs the procedure of all value.

That there is a certain blood pressure in the veins, with the possible exception of those connected with the thoracic cavity, is admitted; and this pressure is quite sufficient to move the small and comparatively light column of mercurial suspension in the needle and show that the lumen of the instrument is in direct communication with the circulation. The following conditions, however, must be observed:

1.—The needle must be plunged into the tissues not empty, but thoroughly filled with injection fluid, so that when the syringe is disconnected the interior of the needle cap is filled with the suspension. Capillary attraction of the walls of the cap gives a concave surface to the visible end of the column of fluid. The least flattening of this concavity, not to speak of its slow bulging forward into a convexity, is proof of the existence of pressure at the needle point; and this can only be exerted by the blood in a vessel. It is the signal for immediate stoppage of the procedure at that point. It is not only unnecessary, but improper to wait until the suspension in the needle has been forced out, and blood follows; and it is quite wrong to regard the appearance of blood in the proximal lumen of the needle as the criterion of the safety of the injection.

2.—The needle point must not be displaced whilst reapplying the syringe and making the injection. Hence the needle should be plunged hard into the tissues right up to the hilt, the shoulder of which should rest firmly against the skin; and hence also the connection between needle and syringe should be of the slip variety, permitting the ready and undisturbing reconnection of the instruments. If in the manipulation the needle is either withdrawn or plunged in a little, or even moved sideways, its point is displaced, and the safety test is lessened in value. Transfixion of veins by the needle plunged blindly into the tissues is necessarily of frequent occurrence, and is shown by oozing of blood after the needle is withdrawn. It is of no consequence at all, since the pierced veins are closed by the transfixing needle shaft whilst the injection is being made, and the tissues close up after the needle is withdrawn. A slight withdrawal of the needle, however, may place its point within a transfixed vessel, or it may be plunged into a new one.

3.—The lumen of the needle must be perfectly patent. If it is partially obstructed by an accumulation of the granular salicylate there may be sufficient resistence to the comparatively slight blood pressure to prevent any very apparent or rapid forward propulsion of the suspension. On the other hand the pressure exerted through the piston is very much greater, and may force the fluid through a partly obstructed needle. Hence the rules that I always insist on: the fluid in the cap must be watched very closely for at least half a minute before the safety of the implantation is decided on; the injection itself must be made very slowly and gently; and the procedure is to be stopped at once if there is the least obstruction to the easy and steady outflow of the suspension.

These points are minutiae of technic, of course, but they are important since the success and safety of the injections depend on them, and they should be observed in a method that is coming into extended and general use. Their non-observance may explain some failures, and answer some criticisms. The broader facts about these embolisms after the injections are of greater interest.

Personally I have never had an embolism occur; I have never even seen such a case. Though there are no figures at hand, I have certainly averaged over 1,000 injections a year for a number of years

past in my office. My assistants in various institutions have made a greater number; and the occurrence of embolism has been reported to me twice. It is quite possible that the technic was not perfect in these cases, since the injections are usually made by the newest and youngest members of the staff. I find that about once in thirty injections I enter a vessel, and have to withdraw the needle.

According to all reports, however, embolism, if it should occur, is not a serious accident. The patients have violent cough for a time, and perhaps some pain; but they recover entirely in a few hours or a day or two. A distinct reaction in the form of malaise, chills and fever, occurs sometimes; it is not due to embolism but to the introduction of a metallic substance into the body, and is analogous to the reaction after toxin injections.

I reserve for a forthcoming paper the consideration of certain other criticisms, suggestions and improvements of the method of administration of insoluble mercurials by injection. So far as pulmonary embolism is concerned, its occurrence can be avoided with as near an approach to certainty as anything in medicine, by the observance of the precautions detailed above. When it does occur there is reason to believe that some fault of technic has been committed. Even with a moderate amount of care it is very infrequent indeed. And when it does happen it is not of serious import. These are the conclusions reached regarding it by many others as well as by myself.

144 WEST FORTY-EIGHTH STREET.

DRUGS IN CHOLELITHIASIS.

Regarding the use of drugs in cholelithiasis, there are very few that can be administered with any degree of confidence that results are to be secured, save those indicated from a careful study of the gastro-intestinal tract (including the stools and gastric analysis), those that are indicated by a study of the circulation, and those that are indicated by a study of the blood.—JOHN H. MUSSER in *The Therapeutic Gazette*.

MAGNESIUM SULPHATE IN THE TREATMENT OF TETANUS.

By the use of magnesium sulphate subarachnoid injections it is possible to achieve complete muscular relaxation in almost all cases of tetanus; from the report of results there seems to be a distinct benefit to the patient in this condition in that it prevents the rapid exhaustion due to convulsions and in most instance it has been possible for the patient to take nourishment.—R. T. MILLER, *American Journal Medical Sciences*.

BORDERLINE CASES IN MEDICINE AND SURGERY.

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Because of their comparative infrequency, or on account of being sequential to interdependent diseases, certain affections offer obstacles to early recognition.

Reasonable delay in the diagnosis will not generally count against the successful treatment, even of a surgical affection, but this will not hold true in so urgent a disease as

ACUTE INFECTIVE OSTEOMYELITIS.

With the care taken in these days to promptly reach an accurate diagnosis, this disease will rarely be named articular rheumatism, nor acute tuberculosis, nor will dangerous delay occur in anticipation of an exanthematous fever, for the reason that the symptoms can scarcely be mistaken; and it is only on account of the danger of an exceptional oversight that it is here included.

The pain is especially severe. It is deep-seated and boring in character. So great is the suffering, as to be demoralizing to the patients; even their disposition and temperament are changed. The temperature is comparatively high, reaching 103 degrees and 104 degrees, with but slight recession in the morning; the elective points of disease being near the end of the long bones; but in the beginning, at least, it is unilateral, the swelling insignificant, yet deep pressure elicits the most lancinating and overwhelming pain, and moving of the limb aggravates the distress, which is so great as to be practically diagnostic.

The chronic type of osteomyelitis, particularly ocurring in young children, is mentioned because of the danger of interpreting a moderate disablement as of rheumatic origin. Firm pressure over the bone, as, for instance, over the os calcis, will reveal sufficient definite tenderness to aid in an accurate diagnosis, and while in the acute type the earliest and most radical drainage of the medullary canal is necessary, first, for the preservation of life, and, secondly, for the conservation of the limb, yet in the chronic form, providing for drainage by means of multiple punctures with a bone drill usually leads to complete recovery.

LEAD COLIC.

Contact with lead colic in the industrial centers so fixes the clinical picture as to make this disease easily recognized, but in communities where occupation brings but few in contact with the metals, or where the handling of it is occasional, the develop-

ment depends more upon an idiosyncrasy, hence it is infrequent and recognition is not apt to be prompt.

It has been the experience of the writer to find lead colic, rather severe in type, in the editor of a weekly paper, who did his own typesetting, and what is more noteworthy, as having traced a case of lead colic in a clerk of a general country store to his habit of polishing stoves barehanded, and to have proved the diagnosis in the latter case by his immunity when wearing gloves.

Instances are recorded where surgical aid has been sought for its symptoms, so that this disease becomes potential even from a surgical point of view. The symptoms need not be recounted; they are classical—but in any case of doubt concerning the cause of abdominal distress, the possibility of metallurgic ileus should be weighed, every detail in the occupation and habits carefully considered.

PAL'S DISEASE.

Another, though opposite type of ileus, occurring usually in middle life, or in advanced years, is Pal's disease, or the disturbances incident to arteriosclerosis, involving the mesenteric vessels.

Even before Pal's complete discussion of vessel spasms, an abdominal form of angina pectoris was recognized and described; this gastric angina pectoris came on exactly as typical attacks do, save that the pain was distributed in the epigastrium, rather than toward the shoulders. These gastric attacks sometimes alternated with the typical precordial-shoulder seizures.

According to Pal's further investigations, the pain of certain forms of lead colic and the crises of locomotor ataxia are also due to the vasomotor contraction of arteriosclerotic vessels.

Pal also describes a form of abdominal crisis, in which neither of these physiological factors is to be found, and which occur in a basis of the ordinary arteriosclerosis. These sudden attacks of pain are found particularly in the upper abdomen, the appendix region, and in the center of the abdomen. (Plexus solaris). In some cases the entire abdomen is painful on pressure, without any definite point of tenderness. The characteristics of this condition are a sudden, severe pain, with localized paralysis of the peristalsis, with concomitant localized tympanites and constipation (paralytic ileus). The intestinal wall suffers in motility from impeded circulation until edema occurs, and, in severe cases, this can go on to thrombus formation and consequent gangrene. The diagnosis rests upon demonstration of an arteriosclerosis, and the increase of blood pressure during the painful attack. The diagnosis can be therapeutically proven by the relief of pain and diminution of blood pressure following the use of vasodilators.

PLEURAL EMPYEMA.

A disease which the general practitioner, particularly in the country or small settlement, does not have a fair opportunity to recognize is empyema, following pneumonia. With the resolution of the primary disease, the doctor is informed that it is unnecessary to call, although he is probably later notified that the case is gaining very slowly. This message is repeated, until finally the doctor has an opportunity to see the case, when there is little or no fever, and a comparatively small area of dullness may be regarded as imperfect resolution, whereas an oportunity more regularly to watch the case would have cleared the diagnosis. The value of the temperature reaction may be misleading in cases of long-standing suppuration, just as it may be misleading in the most acute infections of the peritoneum, in which the absence of temperature is not a guide to actual conditions. Not only following an irregular termination of pneumonia may empyema be suspected, but following a bronchial pneumonia of the exanthems, and traumatism of the chest, as well as pleurisy; and what particularly concerns the surgeon is empyema as a sequel to suppurative appendicitis.

Transferred infections occur in about five per cent. of such cases, the more common locations being the subphrenic space, the pleural cavity, and abscess of the liver. It should be a rule, therefore, to keep careful watch upon the chest in a suppurative case of appendicitis, where convalescence is tardy or the symptoms irregular, as early aspiration or drainage is necessary to forestall the dangers of this secondary surgical lesion in a patient unprepared for further suppurative disease.

MORTON'S DISEASE OF THE FOOT.

The only reason for referring to metatarsalgia is its comparative rarity, and the transferred pain often accompanying it. Frequently we have found the pain described as being most severe just below the knee. Sometimes it is referred to the hip, the distress in the foot being vague, and even inexperienced by the patient, until definite pressure is made over the metatarsal bone of the ring toe, when the patient himself realizes that this is the point from which the distress has been radiating, probably after having had a full course in massage, electricity and baths. Whether corrected by a modified shoe, supporting the transverse arch, or by excision of the head of the bone, is not germane in

this connection, as it is the recognition of the disease that we wish to emphasize.

APPENDICITIS IN CHILDREN.

Appendicitis in children offers difficulties in diagnosis, on account of lack of subjective response; from an imperfect history; from the obscuration of chest lesions, and from the early symptoms of infectious diseases. In the face of these difficulties, the fact that the walls of the appendix in children offer comparatively less resistance and that the omentum is immature, make far greater danger of peritoneal sepsis, and call for prompt surgical aid. There is less nausea, and vomiting occurs less frequently in appendicitis than in the gastro-enteric disturbances in childhood. Exceptions to this will occur in the stormy type of the disease. The related symptoms are more illuminating, and of these the position will often suggest inflammation of the right lower quadrant, the child will incline to the right side, with the leg flexed, and with the hand acting as a migratory guard over the affected area. Muscular resistance has less weight, clinically, than in adults, but tactfully and gently elicited it strongly favors the diagnosis.

Inflammation in the chest cavity must be determined by a physical examination, and, if present, its muscular rigidity excluded. While it is true that hip joint disease may be regarded as coming within the differential class, we do not regard that with painstaking examination any doubts will remain on this point. Persistent vomiting, abdominal pain, temperature and pulse acceleration, leucocytosis, muscular resistance during the quiescent periods, and position in bed, with exclusion of chest lesions, will strongly point to the diagnosis of appendicitis in children.

ABSCESS OF THE BRAIN.

Cerebral abscess may develop insidiously, so remote is the history of middle ear disease; or so small may be considered the danger of infection through emissary veins, and so unobtrusive the early symptoms, that great danger may be done before the real condition is recognized.

Suppurative lesions, furthermore, may develop so slowly, become encapsulated and remain latent, following the slow process of erosion of the bone, with involvement of the meninges or venous channels, that the potential results of the infective agent may be observed.

Inflammatory extensions from the middle ear in order of frequency are (a) extradural abscess; (b) sinus thrombosis; (c) brain abscess; (d) purulent meningitis (Welty). Broadly speaking, symptoms comparatively mild, yet of a cerebral type, require alert appreciation to secure the most favorable outcome.

Brain abscess in particular should be suspected, when there is persistent localized headache, irritability, insomnia, drowsiness, nausea; add to this a slow pulse, mental obscuration, disturbed vision, even with a low temperature range, the case may be regarded as having arrived at a surgical stage.

Following a classical course, the respective stages of (a) irritability; (b) pressure; (c) toxemia, will appear in brain abscess, yet the symptoms may develop so rapidly as to eliminate a picture so regular.

The elective period for operation is coincident with the early manifestations of pressure.

The history of rigor, while important, is not always properly interpreted as to certainty and degree by the patient, yet repeated rigors count for much in the history of infectious sinus thrombosis. The diagnosis of this condition is confirmed by wide and rapid oscillations in the temperature. In addition to dizziness, slight elevation in temperature and mental stammering, localized tenderness upon pressure above and behind the mastoid becomes a symptom of importance in extradural abscess.

The practical side is that when cerebral symptoms are complained of, the channels should be carefully examined through which infection could occur, and the clinical chart should minutely show all the symptoms at frequent intervals.

Awaiting the appearance of optic neuritis; of impaired reflexes, of local paralysis, and of convulsions, is to reach a stage where the chances for recovery are exceedingly forlorn.

FUNCTIONAL DISEASES.

No class of cases furnishes so large a number of near borderline cases in the aggregate examinations made by the surgeon as functional diseases, and it is from this same class that a large majority of the recruits are received by the scientists. They are especially migratory in their medical history. They have had many consultations, have studied their own case, and become expert in graphically reciting symptoms. Purely medical measures have failed; their dietary habits have been self-imposed; they have employed the latest fad cures, and they are apt to thrust themselves upon the surgeon or join the ranks of Christian Science.

If the functional disease relates to the digestive organs, the patient will speak of a posterior-no-loop gastro-enterostomy, and of a subsequent entero-enterostomy, and of duodenal ulcer with a familiarity that is surprising. Taken in full, their history

from a surgical standpoint is nebulous, but their implicit faith in being relieved by an operation becomes a menace against which the surgeon must carefully guard.

That many of them are cured by Christian Science treatment is a fact demonstrated many times in each community. That they may be relieved by surgical operation as a fetish is also true. But that neither of these have substantial reasons is the point we wish to emphasize, because such psychotherapy is incomplete, and does not take into account the need of work-cure for one, and rest-cure for another, nor the necessity for encouragement and actual education from the ripe clinician, who can weigh the individual factor as well as interpret the disease and its secondary effects.

Many cases of this kind have so long tampered with the digestive organs that it requires some time to redevelop a normal capacity for taking and assimilating a full share of blood-making, heat-producing nourishment.

The logical road to relief is through superalimentation, elimination, diversion, agreeable occupation; and the conviction that a physical salvation is attainable by measures less heroic than by a major surgical operation, more sensible than through the charm cures of Indian vendors, or the fetish of the faddist, and more reasonable than by the strangely mated vagaries of faith and health taught by the Scientists.

SURGICAL INDICATIONS FOR THE USE OF TINCTURE OF IODINE.

The indications for the use of tincture of iodine in surgical practice are numerous, and it is interesting to note that in 1880 Dr. H. P. Louthier, of St. Paul, called attention to this remedy. (Walsh's Retrospect, Vol. II, 1880, p. 534).

Besides the minor indications for tincture of iodine locally, as generally employed, its use in two important surgical conditions promises to give enduring witness to its efficiency.

First, in the treatment of tuberculosis of fascia, and secondly, in its application to that class of wounds, frequently of industrial origin, in which there is contusion and laceration of the soft parts with the opportunity for dirt and débris to be ground into the wound, as well as in *punctured* wounds, including, especially, wounds made by explosion.

In the first indication, however thorough may be the uncovering and excision of the tubercular fascia, there yet remains suspicious areas of tissue, undernourished and sodden, dipping between muscles, or covering tendons or large bloodvessels, which are beyond actual surgical removal, and it is over these areas that we have been impressed and not disappointed with the great value of Churchill's tincture of iodine, locally applied.

It has been the custom of the author to use it, with results most gratifying, and while it has been used most freely, no bad effects have been noted other than mild iodine symptoms in a couple of cases. The results have been uniformly good, and we believe this practice will make for the difference between success and failure in severe cases. General constructive measures which bring up the vitality of the patient should always form a part of the routine treatment.

In the second indication, namely, in contused, lacerated and punctured wounds, we get not only the antiseptic value of iodine, but we have in this agent by far the best remedy to combat the *tetanus bacillus.*

After thoroughly cleansing such wounds, looking particularly for imbedded, foreign bodies after explosive injuries, the local use of iodine offers, indeed, the best measure of protection against this anerobic germ.

For many years it has been the practice of the writer to employ also the anti-tetanic serum at the time of primary dressing.

We believe the efficacy of tincture of iodine in the treatment of many minor, poisoned wounds, and its practically specific action in the two major ailments, tuberculosis of fascia, and tetanus, in the one curative, in the other preventive, warrants these recommendations for its further use.

TYPHOID PERFORATION.

An over-enthusiastic surgeon would many a time open a patient's abdomen were not the physician at hand to remind him that sudden pains in the course of typhoid fever are not unusual; that a leucocytosis of from 10,000 to 12,000 has occurred and the patient seemed none the worse; that the patient has vomited at times without appreciable cause; or, that in another instance, abdominal pain and fall of temperature were significant of intestinal hemorrhage and not of perforation.—R. H. HARTE in the *Boston Medical and Surgical Journal.*

MALIGNANT DEGENERATION IN GOITER.

In goiter under observation, if the gland begins to grow it should be promptly excised, because of the great possibility of its becoming a malignant growth. Many more thyroid glands should be removed just as benign tumors elsewhere are removed—to prevent the appearance of a malignant growth.—GEORGE W. CRILE, in *The Lancet-Clinic.*

A MODIFIED OPERATION FOR INGROWING TOE NAIL.

A. MONAE LESSER, M. D.,
Surgeon of the Red Cross Hospital,
NEW YORK CITY.

For the last ten years, the writer has performed a modified operation upon the toe nail with such excellent results that he has given up every other method for the one hereinafter described.

The operation differs from Cutting's in the retention of the skin flap, which favors quick recovery and gives better results than any other method known to me. The simplicity of the after-treatment also warrants the little extra work required for the operation.

Of course, there is but one kind of ingrowing nail which really requires surgical interference,

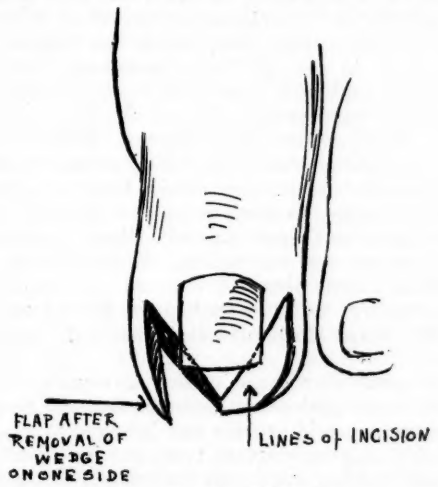

Figure 1. Technic of Operation.

and that is the case in which the fleshy parts at the side and often in front of the toe extend far beyond the downwardly curved distal margins of the nail. And for this condition the operation is as follows:

When general or local anesthesia is complete, the preparatory technic of asepsis perfected, and an Esmarch hemostatic band applied, make an incision on both sides of the toe by which the skin only is separated from the adjacent lateral tissue as far back as the lower third of the nail or further if necessary; lay back the flaps and hold them back with wet sterile saline gauze. (As the vitality of this portion of the body is low, the sterile saline pad is preferable to dry dressing). Next remove the tissue lateral to the nail. Begin the incision at the distal end of the toe about 10 m.m. under the lateral margin of the nail, and continue it in a line obliquely outward to meet the point where the skin flaps are attached, taking care that the flap is not cut. The removed tissue is wedge-shaped, the base having been taken from the front of the toe and the point at the place where the skin flap ends. After all bleeding is stopped lay the flaps on each side under the nail, and suture them or hold them there with narrow strips of sterile adhesive plaster. Stretch a plaster strip about 2 c.m. back of the flap to the same distance on the other side around the front of the toe.

Should the nail have been septic before the operation place the strip of plaster low enough toward the plantar surface to allow the insertion of a small strip of iodoform gauze under the lateral margins of the detached nail; place the ends of the drain over the first layer of dressing. Use two layers of iodoform gauze dressing if the wound

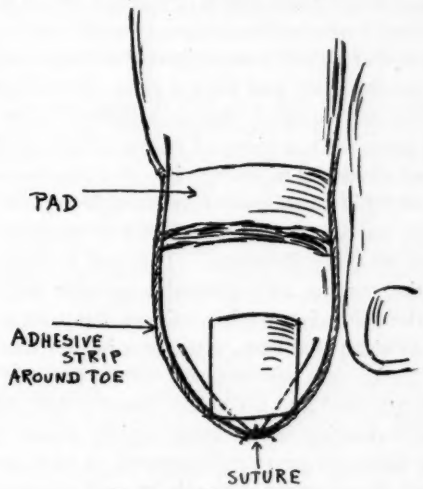

Figure 2. After Operation.

must be drained, the first under the ends of the drainage gauze and the second over everything (each layer to be three or four-ply). Cover all with a piece of gutta-percha tissue and tighten with adhesive plaster.

If the patient desires to go out after the third days, or even before, if very necessary, place to the base of the toe a pad of gauze which will stand higher than the dressing so as to form a protection against the pressure of the shoe upon the nail. Of course, this is only needed when the patient must go out. It will require from seven to nine days before perfect union has been completed, and even then it is advisable to protect the toe by plastering a four-ply layer of gauze across the base of the toe.

The advantages of this operation can be readily recognized by those who suffer all forms of annoyances at the first redressing after Cutting's opera-

tion, when the tissue including the skin is removed. I once witnessed such a procedure in which the patient suffered more pain and loss of blood at the redressing than he had before or during the operation—while when the skin is left and the operation performed under perfect asepsis the patient is free from pain. The shape of the toe becomes much better and what is more advantageous the meteoresthesia of the cicatrix, which often follows the complete removal of the lateral tissue, is entirely prevented.

When the operation is performed with local analgesia, the pain caused by the insertion of the needle can be avoided by the employment of cataphoresis of a solution of cocaine to which is added a proportion of adrenalin chlorid solution.

To induce analgesia, proceed in the following manner:

Fold a large towel (8-ply), wring it out of warm water and apply to the posterior broad part of the thigh, or the patient's back about the lumbar region, and over the moist pad place a piece of metal gauze to which the negative pole is attached; cover the metal gauze with a piece of rubber tissue or sheeting and strap the parts tightly. For the toe cut a piece of 8-ply gauze pad large enough to cover not only the parts to be cut, but from two to three c.m. beyond in every direction. The pad is saturated with the cocaine and adrenalin solution and laid upon the field of operation. Cover this with a soft layer of sheet platinum, 1 c.c. less in size than the pad. To this the positive pole of the galvanic battery is attached and the entire covered with rubber tissue or sheeting and strapped tightly to the toe.

Use about 10 or 15 milliamperes or even 20 for at least 18 minutes, although 15 will produce the effect. When the pads are removed the surface has a bleached appearance. The incision in the skin could be made without pain. It is better, however, to inject hypodermatically a sterile solution of cocaine hydrochlorate 0.75 per cent. with a 5 per cent, adrenalin before incising in order to insure absolute and perfect analgesia.

16 West Sixty-eighth street.

PARAFFIN PROSTHESIS.

From our present state of clinical and histologic knowledge, paraffin, when injected into the tissues, is attended with considerable danger of embolism and amaurosis. The paraffin is promptly removed by phagocytosis, becomes replaced with fibro connective tissue, and excites no small degree of local inflammatory reaction. — M. L. HEIDINGSFELD, *Journal of the American Medical Association.*

A CASE OF ACUTE MASTOIDITIS, COMPLICATED BY SIGMOID SINUS THROMBOSIS, EXTRADURAL ABSCESS, ENCEPHALITIS AND MENINGITIS —OPERATION—RECOVERY.

SEYMOUR OPPENHEIMER, MD.,
NEW YORK CITY.

A. A.—Female, aged twelve, was seen by me in consultation with Dr. H. L. Goodman on the afternoon of March 3d, 1908. For two weeks previously the child had had a slight cold, but felt well enough to be allowed to go to school. The mother noticed a slight discharge from the ear during this period. Two days prior to my examination the child complained of pain in the left ear, which became more pronounced during the day. The following day, the temperature varied between 102 and 103 degrees; pain in the ear less, with some discharge. Patient in bed and comfortable. During the night the child became irritable and complained of much pain. The day of my examination the child was very irritable and restless and complained of headache; discharge from the ear profuse; temperature 104 degrees.

At 10 A. M. the child had a pronounced chill and gradually sank into coma; at 11 A. M. she was completely unconscious. At 1 P. M. I first saw the child. Temperature 106.5 degrees. Patient comatose, the local condition presenting all the evidences of a marked acute mastoiditis, and the physical state indicating an intra cranial involvement. No convulsions had been noticed, slight generalized spasticity of the extremities, double Kernig and McEwen's signs present.

The patient was removed to the private pavilion of Mt. Sinai Hospital and immediately operated upon.

The usual curvilinear incision was made through the skin and periosteum over the mastoid process; the entire mastoid process was involved in an acute infection of a very severe type; the bone was of a greenish yellow hue; cells infiltrated with a thick greenish fluid. Culture showed streptococci.

The entire mastoid process was rapidly removed, the extensively necrosed tip being removed en masse; the sigmoid sinus plate was found necrotic; its removal exposing the sinus wall. The vessel was contracted and firm and appeared thrombosed.

The mastoid emissary vein was exposed and traced to its ending in the sinus; it also was thrombosed, standing out in sharp relief with its thickened walls.

On removing the cells over the mastoid antrum, a fistulous tract was seen through its roof, through which pus escaped. This opening was enlarged and about two drachms of greenish pus under great tension was liberated. The dura was then further exposed by extending the skin incision anteriorly over the ear and removing a large plate of bone over the squama of the temporal bone, including the antral and tympanic tegmen.

The dura was then seen to be markedly congested and blueish black, bulging pronouncedly. The dura was freely incised, the presenting brain was much

congested and showed over a large area a mushy friable appearance, with exudation. The pia-arachnoid was greatly congested. Fresh adhesions between pia-arachnoid and dura were bluntly separated and a gauze drain inserted into the sub-dural space. The brain was pulsating, bulging and markedly softened. The vertical limb of the sigmoid sinus was then compressed above and below in the site of its exposure and incised. A fresh reddish-brown clot presented immediately, after which there was an escape of blood. Free hemorrhage was established from the distal and proximal ends of the vessel. Blood culture showed four colonies of streptococci to each cubic ccm.; polymorphonuclear count 90 %; white blood count 31,000.

March 4th, day after operation, patient in a state of wild delirium; temperature 104 degrees. Lumbar puncture practiced for the relief of intra cranial pressure; cerebro-spinal fluid under great tension and cloudy but bacteriologically negative. Polynuclear 75 per cent., mononuclear 25 per cent. Albumen increased.

Prior to the receipt of the laboratory report of the cerebro-spinal fluid anti-streptococci serum was injected into the spinal canal.

March 7th temperature 106 degrees. Patient still delirious, cannot be aroused excepting with difficulty; lumbar puncture, fluid clear, but still under great pressure. Blood culture now sterile.

March 8th, temperature 103 degrees. For the first time patient is somewhat rational. Blotchy erythema present, but quickly disappearing, leaving large areas of localized edema in its wake.

March 9th, temperature 101 degrees. Decrease of leucocytosis and polymorphonuclear count. Mental condition better, large protrusion of necrotic brain substance through dura; some indefinite symptoms of aphasia present. Exact character impossible to determine owing to the general restlessness of the child.

No attempt was made to cut away any of the necrotic brain tissue, as it was feared further injury might be done to some of the brain centers. Subdural drainage discontinued. Large quantity of cerebro-spinal fluid has been steadily escaping.

March 12th, temperature near normal. Dressing of wound followed by a giant urticarial rash, quickly disappearing; also edema of eyelids, lips and vulva, which persisted for some hours. General condition good, but child extremely irritable.

March 15th to 18th. General condition steadily improving. Definite evidences of optic aphasia present, which, however, appeared to be transitory; eye grounds negative.

Examination of aphasia, four objects being used —a pencil, a penny, knife and watch.

Recognizes objects *seen* and can indicate their use by appropriate motion.

Does not recognize objects *felt*.

Recognizes *taste* and *smell*.

Cannot name objects *seen*.

Cannot name objects *felt*.

Understands speech perfectly.

Does not understand printed and written words.

Cannot read aloud printed or written words and does not seem to understand the printed or written words.

Can write the name of objects seen, but only when their names are told to her (*i. e.* can only write at dictation).

Can copy perfectly.

Power to speak voluntarily is fair, words being occasionally jumbled or transposed. Can state all her wants very well.

Repeats words perfectly.

Night of March 18th. Patient became extremely irritable and rapidly sank into a stuperous state. Temperature rose sharply to 104 degrees. Polynuclear count 84 per cent. lumbar puncture immediately practised. Large quantity of turbid fluid withdrawn under great pressure. Smears and culture of fluid negative. Polymorphonuclear 5 per cent.. mononuclear 95 per cent.

March 19th, temperature 105 degrees. Condition unchanged. Patient very noisy and unmanageable.

March 20th and 21st, Temperature down to 101 degrees. General condition markedly improved, although another rise to 104 degrees followed on the 23d.

The condition of the past five days is attributed to the local encephalitis rather than to a general cerebral process, which contention is justified by the pronouncedly apparent change for the better in the child's general mental and physical state which subsequently took place.

April 1st. Condition has gradually improved. Temperature normal. Much difficulty was encountered in managing the hernia cerebri, which, however, was by systematic and gradually increased pressure forced back into the cranial cavity. Aphasia gradually improving.

April 20th. Aphasia now only limited to a loss of ability to remember names of certain objects and loss of the retentiveness of memory.

Improvement from this time on was uninterrupted, and while it was thoroughly realized throughout the course of the illness that a developing encephalitis might at any moment defeat all our surgical efforts, yet much gratification was felt at the outcome of a case which can only be described as moribund at the time of the primary operation.

In conclusion I want to express my appreciation of the assistance given me by the general bacteriological investigations made under the direction of Dr. E. Libman, at the Mt. Sinai Hospital laboratory.

FRACTURE OF THE SKULL.

It should always be borne in mind that in fracture of the skull with depression of bone the symptoms may be due to laceration of brain substance and not to pressure effects. This would explain why in some cases operation gives immediate relief and in others relief comes slowly if at all.—H. STUART MACLEAN in *The Virginia Medical Semi-Monthly.*

SUBMUCOUS RESECTION OF THE NASAL SEPTUM; NEED OF MORE CONSERVATISM IN SELECTION OF CASES. TECHNIC OF OPERATION.

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NEW YORK CITY.

Now that the submucous resection has come to be recognized as the best method for correcting deformities of the nasal septum, there is a tendency among many rhinologists to perform this operation for almost, if not all, the bony and cartilaginous abnormalities. It seems to the writer that it is high time to urge the necessity of carefully considering each case before subjecting the patient to a fairly long and tedious operation, necessarily attended by considerable shock. Surely the old-fashioned spur operation, performed with an ordinary nasal saw, still has a place in intranasal surgery. This latter operation takes but a short time—at most four or five minutes—and does not require packing to prevent hemorrhage, provided the patient is kept quiet and under observation. In many instances it is possible to preserve the integrity of the mucous membrane by making a muco-periosteal or muco-perichondrial flap under which the spur is sawed off in the usual way. This is a surgical procedure which gives the patient relief and at the same time spares him a far more severe operation.

The possibility of obtaining too much space within the nasal cavities is another and even more important reason for not performing the submucous resection in many cases. The nose of a normal healthy human being does not possess two wide open gaping air passages. The principal air channels are the two inferior meatuses, and these are normally narrow. In many patients suffering from nasal obstruction, in one or the other nostril, the removal of the entire bony and cartilaginous portions of the septum is frequently followed by entirely too much nasal breathing space. The result is a dry nose, accumulation of nasal secretion, and a dry pharynx—in other words, naso-pharyngitis, with its accompanying ill effects upon the Eustachian tube and middle ear.

Therefore it is well to consider carefully each case of septal deformity. If adequate relief can be afforded by a spur or submucous spur operation, it is best to be satisfied with this comparatively simple surgical procedure. If the septal deformity cannot be corrected in this way, then the submucous resection, removing the entire deformity, if necessary, taking away the entire bony-cartilaginous plate as far back as the posterior edge of the vomer, can be done.

It should also be remembered that in children, before the nose has attained its full size, extensive removal of the septal plate cannot be undertaken without subsequent deformity in adult life. We must either wait or, if the nasal obstruction is severe enough to make immediate relief imperative, we may try one of the modifications of the Asch operation.

There are certain preliminary measures which should be carried out before the submucous operation is performed. For instance, hypertrophied turbinate bones which press against the septum, perhaps bulging into a concavity, are to be corrected; the enlarged middle turbinate may be partially removed or the inferior turbinate may be reduced by linear cauterization or operation in order to allow the septal flaps, after operation, to lie exactly in the median line. If one of the turbinates is bound to

Figure 1.

the septum by adhesions, it is best to defer disturbing these adhesions until the flaps are separated at the time of the submucous resection.

The Operation.—The submucous operation is so well known that I shall merely describe briefly the method which I employ and indicate concisely the points which I have found especially helpful.

The operation is performed most conveniently with the patient in the sitting position. Success depends upon the degree of completeness with which the nose is anesthetized. I use pledgets of cotton saturated with 10 per cent. cocain solution, to which is added a few drops of 1/1000 adrenalin. These pledges after the excess of cocain is wiped off on a towel—are applied in long strips to both sides of the septum, where they are allowed to remain about twenty minutes. During this time the patient should be directed to hold his head well forward betwees the knees, to prevent the possibility of poisoning from cocain trickling down into the throat through the posterior nares. The strips are then removed and any parts of the septum which are difficult to reach are gone over with powdered cocain on a cotton applicator. Care must be taken that none of the powder is left in the nose.

The incision is made on the convex side, far enough back to save the columnar cartilage, as well as a narrow strip of cartilage to furnish support to the tip of the nose. The cut is a vertical one, beginning high up on the septum, and divides the

soft parts down to the cartilage. It should be extended down upon the floor of the nose and as far cut as the external wall. In this way we obtain flaps which balloon out and facilitate the subsequent steps of the operation. The rectangular knife shown in Figure 1 is used.

The flap, composed of mucous membrane, perichondrium, and periosteum, is now separated from the septal plate on its convex side with Freer's elevators (Figure 2). It is best to begin the separation with the sharp elevator and then to substitute the blunt instrument. We must be sure that the mucous membrane is not separated from the perichondrium by false dissection. This can be avoided by passing the elevator well under the perichondrium and then making certain that the two are elevated in one layer. One flap must be dissected well away from the nasal spine, as a successful result depends upon plenty of room along the floor of the nose. The operator may use almost any nasal speculum, although occasionally a speculum with long blades like Killian's will be found useful to hold back the flaps. When the flap on the convex side has been separated well beyond the deflection, the cartilage is perforated at the site of the initial incision in the mucosa with a small narrow-bladed scalpel. This is the point where one is most likely to cut through the mucous membrane on the opposite side, therefore care must be exercised to avoid this accident which means a permanent defect in the septum. Most operators use a small sharp spoon curette to go through the cartilage, though in my hands the knife is the better instrument.

The next step is the elevation of the flap on the opposite or concave side, which is carried out through the incision already made in the cartilage. Here again I wish to emphasize the importance of dissecting the flap well away from the base of the septum and floor of the nose. When both flaps are freely separated well past the deviation, it is best to begin the removal of the septal plate by taking out a window-shaped piece of cartilage with the swivel knife (Figure 3). There is danger of tearing the mucous membrane if the edge of the flap catches in the swivel blade. This can easily be avoided by assuring oneself with good illumination that nothing but cartilage is embraced by the knife. The upper portion of the bony septum, where it is extremely thin, is removed with the flat septal forceps shown in Figure 4, while Jansen's cutting forceps is by far the best instrument for the thick bone. The latter instrument, which is very powerful, is particularly good for removing the nasal spine.

Figure 2.

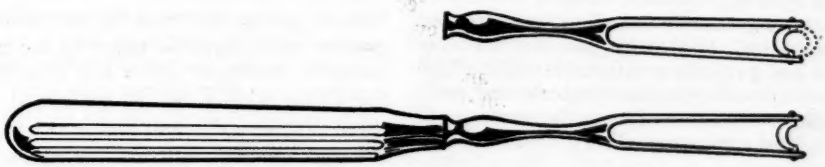

Figure 3.

In regard to the amount of septum which should be excised, my rule is to remove all of the deviated portions, if necessary taking out the entire septal plate except a narrow strip of cartilage just under the bridge and a narrow vertical piece in front adjoining the columnar cartilage. These two strips, together with the columnar cartilage, are essential to furnish support to the nose.

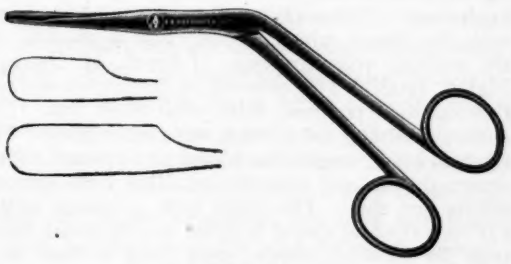

Figure 4.

At the close of the operation, after assuring oneself that no fragments of bone or cartilage remain between the flaps, both nostrils are packed to bring the flaps into apposition. The best packing is vase-

lin gauze, which is inserted in long strips one above the other. I now pack both sides, for I have found that severe hemorrhage will sometimes occur if only one side is packed. At the end of 48 hours the dressing is removed.

The after treatment consists in simply keeping the nose clean.

TWO ATYPICAL CASES OF SINUS THROMBOSIS.*

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CASE I.—C. W., aged 43, appeared at the Manhattan Eye and Ear Hospital on October 8, 1907, giving a history of having a discharging ear, which had persisted for one year; having been caused by a severe "cold." The examination showed a perforation of large size, marginally situated, through which a moderate amount of purulent discharge came away. The patient was put upon rational cleansing treatment, and seemed to improve as time went on. On March 20, 1908, he appeared at the Clinic with a swelling over the mastoid process of the left side, stating that this swelling had appeared two days previously. He had no pain and no fever or chills, and had passed a comfortable night. The swelling extended well over the temporal and parietal regions and forward as far as the outer angle of the eye. The external auditory canal showed edematous infiltrate.

Believing that I was dealing with an acute exacerbation of his chronic otitis media, I suggested operation and immediately sent him to the ward for preparation, and within a half hour the operation was performed.

Status on admission: temperature, 100.2; respiration, 20, pulse, 80.

Operative Findings.—The usual post-auricular incision demonstrated no pus from the swollen edematous tissue over the mastoid process. This was the first intimation that I had that I might be dealing with some sinus trouble, as previous observation on sinus cases had shown this finding in sinus involvement. This swelling should not be confused with the edema which results from a phlebitis of the mastoid emissary vein. (*Annals of Otology*, March, 1908.) The removal of the cortex showed the mastoid epophysis filled with fluid pus. The cortex overlying the antrum was rather thick. The mastoid cells extended backward and upward rather unusually far and were found filled with necrotic débris and pus. The sinus took a course rather far forward and almost bisected in a diagonal direction the mastoid process, cells being evident both above and below it. The sinus wall was covered with necrotic granulations and its exposure for considerable distance failed to show a healthy wall. The sinus was then opened at the level of the antrum and found to contain a dark firm clot. The sinus was now traced backwards toward the torcular for about an inch and a half, being opened all along its route, and free bleeding was obtained about one and one-half inches back from the knee. Working downward toward the bulb the central end of the clot was not reachable, therefore, after temporarily packing the mastoid cavity, re-sterilizing our hands and instruments, the neck was prepared for re-section of the jugular.

The operation on the jugular was easily performed, the internal jugular resected from just above the clavicle to above the facial vein. The clot was now removed from the bulbar end of the sigmoid sinus and free bleeding followed, probably from the petrosal. Both wounds were cleansed, mastoid wound packed in the usual manner and the lips of the neck wound approximated and ligated with three sutures, each having one surgical knot, leaving *in situ* a strip of iodoform gauze to act as a drain. The neck wound rapidly healed, the mastoid wound took the usual course and healed, the middle ear became dry without further incident. Patient eventually discharged cured.

This case is presented to demonstrate how extensive an involvement of the sinus may be present without giving the usual up and down temperature or any other signs to point to the gravity of the patient's condition. Here is a man who walks into the Clinic with a clot in his lateral sinus at least three to three and a half inches in length. Secondly, the only physical sign was an edematous condition over the mastoid region and extending well beyond it.

To point the lesson of this case more thoroughly, I present case two.

CASE II.—B. S., aged 6, came under observation June 10th, 1908, at the Ear Clinic of the N. Y. Throat, Nose and Lung Hospital, giving a history of having had scarlet fever two years previously, from which he recovered with a persistent purulent otorrhoea from the right ear. At the time of his appearance at the Clinic the right ear was profusely discharging a foul smelling thick creamy pus. The left ear was examined and found normal. Cleansing, antiseptic treatment was instituted and this was continued until June 15th, when the mother reported that he had vomited during the previous day; had passed a restless night; had some temperature, and complained of pain in the right ear. During the examination he vomited excessively and seemed a very sick child. Temperature 101.6, pulse 120, respiration 26.

I sent him to the Red Cross Hospital for observation, because the local condition in his ear, the abscence of any mastoid tenderness on either side and the free discharge of the pus did not seem to me to be the cause of his illness. On the other hand, a thorough physical examination by the attending physician of the hospital, Dr. L. K. Neff, gave negative results. He was kept under observation until June 18th, when because of a beginning swelling

* Read before the Section on Otology (N. Y. Academy of Medicine), October 9, 1908.

radical operation was performed. His condition being summed up as an acute exacerbation of his chronic otitis media on the right side.

Operative Findings.—The retraction of the soft parts after the usual mastoid incision showed a well developed mastoid outline, cortical land marks well defined. The mastoid process was found partly eburnated, but there were well marked cells radiating about the tympanic cavity and mastoid antrum. These cells were filled with fluid pus and with pseudo-cholesteatomatous masses. An exposure of the sigmoid portion of the lateral sinus was effected at its knee for about ¼-inch square. The wall was found to be healthy. The usual technical procedure to take down the post-auricular wall, eviscerate abnormal mastoid and tympanic contents, and cut a Panse flap with primary suture of the post auricular wound, then followed.

It is to be noted in passing, that the mastoid process presented no deviations from the normal process of a child, six years of age.

The day following the operation we find the temperature normal, pulse 74, respiration 22. Removal of the outside dressing showed the wound to look healthy. On the night of the second day, the temperature was still normal but the pulse rose to 102. respiration to 26. The child was slightly restless during his sleep, although nothing of an unusual character was observed; occasionally the patient complained of pain in the ear which had been operated upon. On the morning of the third day after operation the patient was sitting up in bed crying that he was hungry, presenting normal temperature, pulse 104, respiration 24. At 8.30 that morning he had vomited after having taken some gruel. Towards evening he became very restless, had a crying spell and in a seeming frenzy had torn off his bandages, nevertheless at 11.30 that night he was sleeping and the evening condition showed temperature 101.2 degrees, pulse 122, respiration 20. The nurse reported a slight attack of what she termed "delirium" earlier in the evening. On the morning of the fourth day, I found the patient lying on his back perfectly relaxed and unconscious. Temperature 102 degrees, pulse 132, respiration 22. His condition alternated between periods of unconsciousness and periods of crying. There was no Koenig sign, no opisthotonus. The dressings were removed, the stitches taken from the wound and the entire cavity inspected. The wound was found clean with no signs of pus. Thinking that there might be some local condition in the meninges or in the sinus (although there were no symptoms to justify such a diagnosis) a few whiffs of chloroform were administered and the tegmen removed exposing the meninges and the bony sinus wall was also removed to expose the sinus. Both were found healthy in appearance and further efforts were temporarily stopped. The child died that afternoon. Tentatively a diagnosis of rupture of a brain abscess was made. Permission for a partial autopsy was obtained and this showed the meninges normal, no increase in cerebral fluid; sections of the brain failed to reveal any brain abscess and showed nothing characteristic although many small punctate hemorrhages were noticeable throughout its substance. The wound in the mastoid showed that it had been completely exenterated and an examination of the labyrinth was negative. The sinus on the right side was found normal. In the removal of the brain, the meninges of the opposite temporal bone were left *in situ* and as a last resort while looking for the cause of death, this was pulled from the cerebral surface of the temporal pyramid. In doing this the left sinus was uncovered and torn and we were surprised to find within it a yellow semi-liquid mass. The skin over the left mastoid was then retracted, its cortex exposed, and realizing then that I was dealing with a thrombosis of the lateral sinus on the left side of the head I endeavored to open the left mastoid. The first stroke of the chisel showed the sinus covered only by a thin cortex and further efforts were stopped until we had extracted the temporal bone. How far toward the torcular the clot extended we could not make out, as part of the mass was lost in the débris following the removal of the brain. It completely filled the sinus from the knee to the bulb and beyond. The thrombus was partly organized and of yellow color and from its macroscopical aspect was pronounced by the pathologist, Dr. Gonzales, a fatty degeneration of the thrombus. He estimated that it had been *in situ* for at least a week or ten days. The specimen showed the middle ear filled with pus and detritus, the antrum small, and no other cells evident at all. The sigmoid sinus was directly under the cortex and took up the entire, partly rudimentary mastoid tip. There was no evidence of real mastoid cells, if we leave out of account the small space directly under the mastoid fossa, and at the angle formed by the two sides of the petrosal pyramid. The contrast of this side to that upon which I operated is very marked, aside from the other peculiarities of this case.

Here, then, was a case in which a thrombus developed during an acute invasion of both ears, in which marked pyemic symptoms were absent. On the right side because of its previous history and local findings and because of the pain, an operation was undertaken, the left side because of congenital maldevelopment, and resulting anatomical peculiarities permitted pus to travel direct from the tympanic cavity to the sinus which was in almost juxtaposition, and a thrombus was thus engendered. This thrombus was evidently not a very infectious variety and became organized, and then, either because of the trauma to the head during the operation on the opposite side or because of some other extraneous factor it underwent fatty degeneration and from the dissemination of this fatty material the patient succumbed. The marked symptoms on the right side marked the graver condition on the left side.

At no time during the patient's illness was there any complaint of pain in the left ear and even at the time the right ear was bandaged the patient seemed easily to hear ordinary conversational tones with his left ear up to the very time that he became unconscious. There seems to be a need for an analytical study of all the atypical cases of sinus thrombosis in order that some data of diagnostic value may be accumulated.

616 MADISON AVENUE, NEW YORK.

THE DIAGNOSIS OF EXTRA-UTERINE PREGNANCY, AND A REPORT OF A CASE OF PRIMARY OVARIAN PREGNANCY.

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It is not my intention this evening to deal with the etiology or gross pathology of the question of extra-uterine fetation, but rather to approach the problem of the diagnosis along the path built by laboratory methods. Some years ago I had forcibly brought home to me the value of the routine examination of uterine scrapings in all conditions demanding curettment, since then, when, in conjunction with Dr. Charles Bentz and later my brother, Dr. Norman K. MacLeod, I have given the laboratory diagnosis of uterine conditions a very careful consideration, and we have investigated all these cases not only morphologically, but also bacteriologically, with the result that several most interesting diagnoses have been arrived at, among these, two cases of ectopic gestation, of which one is, from its rarity, peculiarly important.

In the consideration of the subject under discussion, I may be permitted to briefly define those positions, where the fertilized ovum may be arrested, and where placental gestation begins. These positions are of importance from the fact that the final resting place of the fetus, after rupture of its sac, is greatly dependent upon its primary position. First, primary interstitial pregnancy; second, primary tubal pregnancy; third, primary, ovarian pregnancy. Of these primary forms the tubal is comparatively common, the interstitial is met with occasionally, and the ovarian is an extremely rare condition, in fact, so rare that in looking over the literature, I am able to find the reports of but six cases. The primary forms may develop into secondary ones through rupture of the sac, and then are known according to their new location. The differentiation between the classes is practically impossible before the abdomen is opened.

The diagnosis in a classic case of extra-uterine pregnancy is comparatively simple, but it is seldom that the physician or surgeon sees the patient until the classic features are lost. The signs and symptoms are usually covered by those of an extensive intra-abdominal hemorrhage, and the surgeon is called upon to open the abdomen and perform a life-saving operation. Early in the history of the case the signs and symptoms are those of a normal intra-uterine pregnancy, namely, cessation of menstruation, fulness of the breasts, violet discoloration of the vaginal mucous membrane and morning sickness. As the case proceeds there is pelvic pain and the appearance of an enlarging tumor to one or other side of the uterus. As this tumor grows, the uterus is pushed over to the opposite side of the pelvis, and finally becomes fixed in its abnormal position. The pelvic pain is more or less constant, and is liable to have acute or subacute exacerbations from time to time. There may be little or no alterations in the pulse or temperature. If the fetus continues to live, these signs remain, become more marked, and the fetus may go on to full term. Usually, however, the condition is aborted, the sac is ruptured, hemorrhage takes place and the fetus dies. On the occurrence of this there is a casting off by the uterus of a membrane; this membrane may be passed as a complete cast of the uterine cavity with openings corresponding to the positions of the fallopian tubes and the os uteri, or it may be passed in pieces or shreds. The casting off of this membrane is accompanied by a blood-stained discharge, which may be very copious and which may continue for an indefinite period of time. The intra-abdominal hemorrhage may vary from an insignificant to a very extensive one, in fact, so extensive that the patient dies. If it be small, it may be practically overlooked as such and regarded as an attack of colic. Following a hemorrhage we may have temperature and pulse alterations, which may be due first to shock, second to absorption of fibrin ferment, and third to an infection of the clot.

In dealing with the question of the differential diagnosis, I will divide it into two classes. First, the clinical differential diagnosis; second, the differential diagnosis by means of laboratory findings. In the clinical differential diagnosis it is possible to confound two conditions with ectopic gestation; one of these, appendicitis, should give but little trouble if the case be carefully studied; the other, pelvic abscess, however, must be considered much more carefully, since in it lies the most fruitful cause of mistaken diagnosis.

Pelvic abscess may be acute or chronic in char-

acter, and in both we have a smooth, ill-defined fluctuating mass to one or other side, or to both sides of the uterus. The uterus is fixed, and where one side is alone involved it is pushed over to the opposite side of the pelvis. In the acute, the onset is sudden, marked by the occurrence of a rigor, and usually preceded by an acute inflammatory condition of the endometrium. In those cases following abortion or miscarriage, we have the history of the abortion or miscarriage, followed in a few days by an acute inflammation of the endometrium, which is followed quickly by the onset of the pelvic abscess. In the acute we have the signs and symptoms of a localized peritonitis with marked alterations in the temperature and pulse. In the chronic we have the history of chronic pelvic inflammation covering a considerable period of time with acute or subacute exacerbations from time to time. There is usually associated a condition of chronic endometritis, marked by a profuse uterine discharge. In both the acute and chronic types of abscess we have alterations in menstruation. In the acute we may have a temporary cessation of the function, but in the chronic we usually have a condition of profuse menstruation at irregular intervals, a profuse intermenstrual discharge and a marked dysmenorrhea.

In the extra-uterine pregnancy the onset is insidious and marked by the early signs and symptoms of a normal pregnancy as depicted above. It is not likely to be confused with pelvic abscess until the gestation has gone on up to the death of the fetus and the occurrence of a hemorrhage. Following a hemorrhage, if it be of any magnitude, we find the patient in a condition of collapse with marked alterations in the temperature and pulse due to shock, in which the temperature is lowered, and the pulse is quickened and of a thready character. As the patient reacts the condition of shock disappears, with an improvement in the state of the temperature and pulse, the temperature rising up from its subnormal state and the pulse becoming slower and of better quality. Following the condition of shock we have marked elevations of both the temperature and the pulse due to the absorption of fibrin ferment. This latter condition may subside or the temperature and pulse may continue to be elevated, and it is then due to an infection of the clot, giving rise to the signs and symptoms typical of pelvic abscess. As pointed out above on the death of the fetus there is from the uterus a blood-stained discharge, which may give rise to a distinct odor, due to stagnation of the discharge in the posterior cul-de-sac.

Before taking up the differential diagnosis by means of laboratory findings it may be wise to refresh your mind by a brief histological description of a normal endometrium and a decidual membrane. A normal endometrium consists of two parts: First. the muscularis mucosae. Second, the corium musocae. The muscularis mucosae, being the outer part, does not enter into the scope of this discussion. The corium mucosae, or mucosae proper, however, is of great importance and demands close attention. It may be divided into two parts: First, that portion lining the body of the uterus, and second, that portion lining the cervix. In the portion lining the body of the uterus we find the following histological points: it is composed in a great measure of small, rounded, spindle-shaped, or irregular cells imbedded in a homogeneous intercellular substance, and with but few connective tissue fibers apparent. Its surface is covered by columnar ciliated epithelium. The uterine glands are simple tubes lined by columnar ciliated epithelium continuous with that on the surface. They run obliquely and often with an irregular and convoluted course into the deeper parts of the membrane, terminating in the musculares mucosae, and even in some cases in the uterine muscle itself. The mucous membrane of the cervix differs from that of the body in being more fibrous. The glands are more sacular. The epithelim of the surface is stratified in the lower part, but columnar ciliated in the upper. The glands are all, however, lined by columnar ciliated epithelium. Besides the follicular glands there are to be commonly seen clear yellowish vesicles of variable size embedded in the membrane. These are called ovulae nabothi and probably arise from closed and distended follicles.

A decidual membrane consists of two parts: First, the superficial cellular layer. Second, the deep granular layer. If spontaneously passed the greater part of the glandular layer remains behind, and from this the uterine mucous membrance is regenerated. When curretted away both layers are removed. The cellular layer is made up mainly of the characteristic decidual cells. These cells arise from the stroma cells of the interstitial tissue of the uterine mucous membrane. They usually contain a rounded nucleus surrounded by a broad border of protoplasm. They closely resemble one another in size and shape, and are closely packed together with very little intercellular substance. Occasionally we have a condition of decidual endometritis which is characterized by an extensive small cell infiltration, principally into the interstitial layer of the membrane. This may become so marked as to obliterate the charactristic decidual cells. Later on the cellular infiltration is replaced by a dense network of

fibrillar connective tissue. It commonly gives rise to abortion and this may be followed by an infection, leading up to a condition of pelvic abscess.

In our differential diagnosis by means of laboratory findings we have pelvic abscess, principally, to deal with, but we must also differentiate the different classes of endometritis from the decidual membrance found in the pregnant state. Endometritis is, of course, only important as far as this present discussion is concerned when associated with a swelling situated to one or other side of the uterus. In the endometrium, as in other tissues, an acute inflammation is characterized by an extensive small cell infiltration giving rise to swelling and redness of the membrane. In the chronic, the cell infiltration is replaced by the formation of fibrillar connective tissue, and this may lead to atrophy of the membrane and fatty degeneration of the stroma cells. Endometritis may be divided into the following classes: First, the interstitial; second, the glandular; third, the diffuse or fungous; fourth, the exfoliative or membranous. In the interstitial form the stroma cells have a great variety of shapes and sizes and lay imbedded in a homogeneous intercellular substance, whereas the decidual cells closely resemble one another, lie closely packed together and are only separated by a thin homogeneous intercellular substance. In the glandular form the trouble is practically confined to the glandular parts of the membrane and should not give us any trouble in our differential diagnosis. In the diffuse or fungous form we have a mixture of the interstitial and glandular varieties and it should not be the source of much trouble. In the exfoliative or membranous form we have inflammatory changes in the interstitial tissue with well marked small cell infiltration. The stroma cells are increased in size and resemble very closely the decidual cells, but the latter are more regular in size and shape, and are more closely packed together. In all these conditions of endometritis due to extension from the vagina we may find bacteria. The streptococci, the staphylococci, the gonococci and the bacilli coli communis are those most commonly found. These may be discovered not only in the secretions of the mucous membrane but also in the membrane itself.

In the acute pelvic abscess we have a marked leucocytosis with a preponderance of the polynuclear forms even up to 98 per cent. In the chronic there may be little or no difference in the leucocyte count. In the acute type the vaginal discharge and the uterine scrapings are found to be loaded with pus cells. Smears and cultures demonstrate microorganisms in great numbers, and of these the streptococci, the staphylococci, the gonococci and the bacilli coli communis are the commonest. If the streptococci or the staphylococci are present the opsonic index to the one demonstrated is usually found at a low level. In those cases following abortion the curette encounters a placental site, and the microscope shows typical decidual cells, but in addition it also shows chorionic villi. In the chronic types of abscess the bacteriological findings in the uterus and vagina may be insignificant, but the uterine scrapings usually reveal a condition of interstitial endometritis.

In the extra-uterine pregnancy we have following a hemorrhage, if it be of any magnitude, a leucocytosis with a marked increase in the number of the polynuclear cells, but the count does not go so high as that found in the case of abscess, and moreover it quickly subsides. In addition, however, to the leucocytosis we have a marked decrease in the number of red cells, and a marked lowering of the hemoglobin percentage. Unless the patient has had a vaginitis prior to the impregnation, smears and cultures do not demonstrate any, or at most a very few bacteria. The uterine scrapings show no sign of pus, but do demonstrate that the normal endometrium has been replaced by a decidual membrane, There is no evidence of chorionic villi.

Of the two cases of extra-uterine pregnancy mentioned in the fore part of this paper as diagnosed by means of laboratory findings, one is of special interest, not only on account of its great rarity, but also from its possessing several interesting diagnostic points.

Miss "X," aged 28 years, single. Complaining of pain in the abdomen, profuse blood-stained vaginal discharge, feverishness and headache for the last four weeks. Past history: Healthy up to one month ago. Menstrual history: Commenced menstruating at the age of fourteen; the periods have been regular, lasting three or four days, no dysmenorrhea, the loss not profuse and no intermenstrual discharge. No history of a missed period.

History of the Present Illness.—The illness commenced four weeks ago with pain in the abdomen, fever and a blood-stained discharge from the vagina. These symptoms continued and gradually increased in severity until ten days ago, when she was forced to go to bed. The temperature was irregular and marked by the occurrence of several chills. Condition at the time of consultation, July 10th, 1908: The diagnosis was "pelvic abscess," and we were asked to operate for such. My examination revealed the following physical signs: The temperature was 99.5 degrees, the pulse was 100. The tongue was heavily coated. The lung and heart sounds were normal, and the breasts were not enlarged or tender. The abdomen was distended and tender, especially so over the lower left quadrant;

the percussion note over that area was impaired, but not absolutely dull. Per vagina: The hymen was absent. The cervix was soft and placed in the right side of the pelvis and looking directly downwards; from the external os uteri exuded a blood-stained discharge with a fetid odor; the fundus of the uterus was enlarged, retroverted and pushed over to the right side of the pelvis and quite immobile. The left side of the pelvis was occupied by a large smooth, apparently fluctuant and very tender mass. The diagnosis was agreed to, and it was decided to curette the uterus and open the abscess through the vagina.

Operation July the 11th, 1908.—The parts being rendered aseptic, smears and cultures were taken from the external os uteri and vaginal mucous membrane. The cervix was soft and it was discovered that it needed very little effort to dilate it to the full. Smears and cultures were taken from the cavity of the uterus. The cavity was carefully explored, but did not reveal anything pointing to a placental site. The uterus was then carefully curetted; the scrapings were soft and very bloody, but no active bleeding occurred. A strong suspicion of extra-uterine pregnancy at once arose and further operative procedure was stopped pending the report of the laboratory findings. Bacteriological and morphological reports: The smears and cultures from the external os uteri and vaginal mucous membrane revealed only a few diplococci, and those from the cavity of the uterus revealed it to be sterile. The uterine scrapings were found to consist mainly of large round cells, and no sign of any inflammatory trouble could be made out. The diagnosis of extra-uterine pregnancy was made, and abdominal operation advised as imperative. The patient refused most indignantly to agree with the diagnosis, and furthermore refused operation, stating that she felt much better since the curettement. Her condition, however, did not improve, but continued to get worse, and on July the 18th, we were called in again and given permission to open the abdomen.

Operation July the 18th, 1908.—The abdomen was opened by a free incision in the middle line between the umbilicus and the symphysis pubis. The intestines, the uterus and left ovary were found to be all matted together in a mass. The adhesions were broken down and the parts defined as follows: The greater part of the mass was found to be a large cyst adherent to the upper and posterior surfaces of the fundus of the uterus, to an extensive area of a coil of the ileum, which was enlarged and very much thickened; the left ovary could not be made out, but the left ovarian vessels, very much enlarged, ran directly into the cyst wall. The left fallopian tube was seen coursing over the surface of the tumor; it was apparently normal in every way. During manipulation the cyst wall ruptured and a thick, deeply blooded, stained fluid gushed out, and with it a small solid body, which proved on examination to be a fetus about one and one-half inches in length. The sac was cleaned out, and it was estimated that about one quart of fluid had been removed. An attempt was made to remove the mass from its attachments on the uterus and ileum, but the bleeding was so excessive that we decided to ligate the ovarian vessels. This was done and the hemorrhage at once ceased. The mass was then removed with comparative ease. There was, however, copious oozing from the raw sites on the fundus of the uterus and coil of the ileum. Examination of the right side revealed a multilocular cystic ovary about the size of an orange. This was also removed. The right fallopian tube was apparently normal in every way. The oozing from the uterus and ileum continued copious, making it necessary to place packing in position; this was brought out through the lower extremity of the wound and the remainder of the wound was closed in the usual manner. The drainage was very copious for a few days; it gradually became less in amount and finally ceased in about ten days. It closely resembled in character and amount a normal uterine lochial discharge. Bacteriological examination from time to time revealed it to be sterile. The convalescence was otherwise uneventful.

Examination of the Parts Removed.—The morphological pathology of the specimens does not enter into the scope of this present discussion, and let it suffice to say that the left-sided mass was found to consist of a sac wall, in which was situated a typical placenta. The placenta was two and a half inches in length, two inches wide, and three-quarters of an inch thick; intimately incorporated in it was the left ovary. The fetus was about one and a half inches in length. The right sided tumor was found to consist of one large cyst, and numerous small ones, the ovary being practically replaced by the cysts.

In conclusion, this case was, in our opinion, one of primary ovarian pregnancy. It commenced its growth in a ruptured Graffian follicle of the left ovary, and as it enlarged it became attached to the coil of the ileum and the fundus of the uterus. The placenta derived its blood supply from the fundus of the uterus, from the coil of the ileum and from the left ovary; its main supply was, however, from the left ovarian artery through the left ovary, as the active bleeding encountered early in the operation was controlled by the ligation of the left ovarian vessels. It is interesting to note that the drainage closely resembled in every way a normal uterine lochial discharge. It is also interesting to note that the fallopian tubes were apparently normal. It is our opinion that the fetus died about the time of the onset of the symptoms. The symptoms were due to the presence in that situation of a large foreign body, the occurrence of small repeated hemorrhages and the absorption of fibrin ferment. The absence of the early signs and symptoms of pregnancy, the occurrence of rigors from time to time with concurrent alterations in the temperature and the pulse, the fetid odor to the uterine discharge

and the presence of a large fluctuant, extremely sensitive mass to the left of the uterus made the diagnosis of pelvic abscess justifiable. The condition of the uterus, however, at the first operation was so suggestive that we deemed it wise to cease operating pending the report of the laboratory findings.

327 DELAWARE AVENUE.

EXCISION OF THE ELBOW JOINT; REPORT OF TWO CASES.

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As a result of injury and disease in and about the elbow joint it is common to find arms which are rendered practically useless. A recent case, where the patient refused operation and visited various clinics and hospitals, more and more impresses me with the truth of the above statement.

The most frequent reason for the loss of function is ankylosis at such an angle that the arm cannot be used for handling the knife and fork, dressing the hair, dressing and undressing, and following occupations which call for flexion and extension, pronation and supination. In fact, the sufferer is practically rendered one-handed.

Where the ankylosis is osseous, which is extremely unusual, operation is, of course, clearly indicated; but in those cases here it is fibrous and frequently complicated by swelling and pain, I find that the practice of breaking down the adhesions and instituting passive motion with a view of restoration of function is sometimes followed by the awakening of old tubercular processes, or by inflammation, necrosis, pain and swelling which eventually lead to fixing the member in such a position of flexion that it will be "of most use," i. e., give the patient a stiff elbow which allows of better function than that which previously existed.

I do not feel that by following this rule the surgeon has done all that he should do in many cases, for by a well planned excision a much better result can be expected. This fact is well known to many surgeons and to them it is a pleasure to look back on their results in these cases.

However, in cases where there is extensive tubercular mischief, or where inflammation has been followed by necrosis of the neighboring bones, and abscesses leading to sinus formation, I think that very frequently free incision, curettage and the hope for a stiff elbow in "a good position" is too often the line of action, when an extensive excision would give a better result, fear of a flail joint not to the contrary.

It is with the hope of urging this practice that I venture this communication. Before going farther let it be understood that I only urge the operation of excision in individuals whose age is well within the working limit, say forty, unless the disease be of an active nature, where there is no choice but to operate.

I take it that the report of cases is the practical means of demonstrating the justice of the opinion I have expressed. Permit me to say that no description of the various operations for excision of the elbow joint will be introduced, since the writer is of the opinion that the time of the surgeon is too valuable to be occupied in reading a résumé of that which may be found in any work on general or operative surgery. Suffice it to say that in both of the following cases a single posterior median incision was used and that the customary care was taken in clearing the bones and sawing them through.

CASE I.—Miss F., aged 24, was thrown from a buggy, sustaining a severe comminuted fracture of the condyles of the right humerus, which extended to the elbow joint, as well as a fracture of the olecranon process of the ulna. The doctor who first saw the case put up the arm in a straight position, using a posterior splint which was replaced in two weeks by a plaster cast, this being removed during the third week, when the patient was told to exercise the arm. This she was unable to do, as she could neither flex the arm nor pronate or supinate the forearm. After visiting several surgeons, who informed her that nothing could be done she started for the Sandwich Islands as a school teacher, and en route called upon me while in San Francisco.

When I saw her the condition was as follows: The general health of the patient was bad and she might be described as being generally "run down." The elbow was ankylosed so that the forearm was at an angle of 135 degrees to the arm. She could neither supinate nor pronate the forearm, which occupied a position slightly nearer supination than pronation. All the muscles acting on the elbow joint were atrophied, and the arm was from its position practically useless. The elbow joint was obliterated by a callous mass which gave it a swollen appearance, and this was painful on pressure and on attempts at forcible motion. On consultation it was decided that nothing short of excision of the destroyed joint could be of any benefit. The patient agreed and the operation was performed. As soon

as the incision was made and efforts at clearing the bones were begun, we found that inflammation of the lower end of the humerus had occurred and that the bone was so disorganized that it would be necessary to remove an unusually extensive portion to escape diseased tissue, so that with great misgivings we sawed the humerus through an inch above the margin of the olecranon process. The arm was put up at right angles. At the end of the first week passive motion was instituted, and in the course of the second week the forearm had been gradually carried through various angles until it was brought from full flexion to full extension. The passive motion was continued throughout the whole course of the treatment. On the third week the wound was healed with the exception of a small sinus which led down to the lower end of the humerus, and as this would not heal it was laid open, when we were able to remove a ring of bone which had necrosed and which was about one-quarter of an inch in length. The wound now readily healed, the the patient commenced voluntry efforts at flexion and extension, but the limb was like a flail and would fall from one side to the other in a helpless manner. In order to correct this I had made a steel joint to take the place of the internal and external bony and ligamentous lateral supports, and to my gratification the patient rapidly improved her power of motion and moreover developed an extensive pronation and supination, which she aided by rotation of the humerus.

When I last heard of her she was able to play the piano, dress and feed herself, "do up her back hair," and when dressed could readily conceal her injury except to the practised eye, which would, of course notice the shortening. Since the foregoing report I have received a letter from the Sandwich Islands in which Miss F. informs me that her arm has grown stronger steadily, and that she can now "put up an eight-pound dumb-bell over her head."

CASE II.—R. O., aged 26, was struck by a piece of iron on the tip of the left elbow. The joint was swollen and painful and the arm fixed in the extended position remaining so for a year, when efforts were made to forcibly flex the joint. This led to increased pain and stiffness and subsequently an abscess formed just above the olecranon process, which opened itself and continued to discharge up to the time when I first saw him. On examination a sinus was found to lead down to a caries of the olecranon and also of the articular surface of the humerus. The joint was swollen and all the bones going to form it were thickened. The arm was fully extended and there was no power of flexion, extension, pronation or supination. The muscles of the arm and forearm were much atrophied.

Excision of the joint was advised and agreed upon. The operation showed the joint to be tuberculous and it was necessary to remove half an inch of the shaft of the ulna as well as an unusually large portion of the humerus, the section being made about half an inch above the margin of the olecranon fossa. Only the upper portion of the excision wound was stitched and the cavity (after extensive curetting and free use of the scissors to remove suspicious tissue) was packed with iodoform gauze.

The after-treatment was much the same as in case one, except that no steel joint was found necessary. At first there was a tendency to a flail joint but the parts contracted and the muscles adapted themselves to the new conditions.

The eventual result will be best understood by quoting the patient's words when I recently removed a small piece of bone, two years after the original operation.

I asked him what he had been doing; he said that he had been washing dishes, picking fruit, waiting on table and wood-chopping, all of which occupations require that the elbow joint should have extensive motion. I then requested him to go through the motions of extension, flexion, supination and pronation with his coat on in the presence of two doctors who, when asked what was the matter with him (not knowing of the operation) said that his arm was congenitally shortened.

In commenting on these two cases let it be said that there is nothing unusual except the extensive removal of bone, and it is to this that I desire to call particular attention, in fact it is the sole reason for the present report. In Case 1, on discovering the extensive destruction of the humerus, I felt hopeless as to the future possibility of obtaining a movable joint, and it is indeed strange that the muscles could so adapt themselves to the new conditions that an almost normal range of motion resulted, even with the aid of a mechanical steel hinge. I desire to call attention to the fact that the collar which surrounds the forearm need only be tight enough to keep the apparatus in position and does not interfere with supination and pronation of the forearm.

In Case 2 it seemed almost foolish to attempt anything but amputation, but with the memory of Case 1 as a guide, the operation was not only done, but proved most successful and instead of an armless cripple we have a man who when dressed and ordered to go through a wide range of motion makes it difficult for even a medical man to diagnose his condition.

I trust that these two cases may in some slight measure demonstrate the fact that even extensive removal of the elbow joint may be followed by good results, and that one should hesitate in cases of extensive destruction before he is satisfied with either a stiff joint or decides to amputate the limb, since he can always carry out either plan should efforts for a movable joint fail.

75 WEST FIFTY-FIFTH STREET.

A CASE OF EXTENSIVE CHEST INJURY—PLASTIC OPERATION—RECOVERY.

W. H. AXTELL, A.M., MD.
BELLINGHAM, WASH.

I report this case because of the extensive injury sustained, the amount of tissue destroyed, the extensive exposure of the chest cavity, and the complete destruction of the costal pleura. Another feature worth mentioning in the repair of the injury was the use of muscular tissue in the closing of the pleural cavity.

History.—Male, German, aged twenty-eight years, shingle sawyer, robust and very muscular; had served three years in the German navy, and several years as a seaman on a German merchant vessel. No history of specific disease, although a chronic fistulous tract repaired promptly under iodides.

The Accident.—August 26, 1907, at 7 A. M., when starting to work, the patient fell against a large circular saw, containing large teeth, with wide set, which was revolving many thousand times per minute.

The Injury to Hand.—In order to protect his body he thrust his right hand into the saw, severing the thumb and first and second fingers at the second joint, and the third finger at the third joint.

To Chest.—The saw first struck flat on the chest, the teeth scratching the skin only; but as the body turned slightly the teeth struck deep into the chest, making a semi-circular cut 19½ inches in length. The upper end of the cut began slightly below and to the outer end of the left clavicle, and slightly above the margin of the anterior axillary fold. From this point the cut extended circularly downward and inward to one-half inch to the right of the sternum, thence downward and outward again to within two inches of the axillary line, and over and through the abdomen below the margin of the ribs. All of the tissues, including the soft and osseous tissues, were completely severed and a large portion carried away and destroyed.

The saw over the sternum was only superficial, but as the body made a slight turn it entered deeply into the chest cavity destroying all of the tissue, including the ribs and costal pleura to a width of 3½ inches by 6 or 7 inches in length, thence, as the body turned slightly again the saw ploughed along the surface of the ribs, underneath the skin and muscles of the chest wall; the cut and retraction making a wound 10 inches in width at the center of the chest, and at the concavity of the semi-circle.

Sections of the second, third, fourth, fifth and sixth ribs were destroyed, varying from one inch at the second, to three inches at the fourth and fifth ribs. The costal pleura was completely destroyed over the seat of the greatest injury. The lung and pericardium were exposed. There was one puncture of the lung from which the air bubbled, and emphysema followed. All the intercostal arteries, veins and nerves in the injured area were severed; the pectoralis major was severed completely from the chest, and a small portion of the pectoralis minor. The patient, having fallen face downward onto a dust pile, the whole exposed surface became filled with dust and grease.

Operation.—With the assistance of my associate, Dr. Max Mehlig, I attempted to repair the damage. Over 450 speculae of wood fiber were picked out, piece by piece, from the chest cavity, and the surface of the lung. Several large lumps of dust, covered with grease, were removed from the depths of the chest cavity. All the ragged edges of the costal pleura, skin, and muscles were trimmed away. The jagged and uneven ends of the severed ribs were cut off smooth, in order to bring the periosteum over them. The costal pleura being destroyed, we made a transverse incision in the pectoralis major muscle near its point of attachment to the humerus, and separated a strip parallel with its fibers to within one-half inch of the costal end that had been severed. This strip of muscle was turned and sutured into the space where the costal pleura had been destroyed. It was sutured to the intercostal muscles, periosteum over the stump of the ribs, and the margin of the sternum. This attempt at plastic covering was made in the hope of closing off the cavity, and, if possible, to supply the missing costal pleura. Incisions parallel to the ribs were made, one on each side of the rib, in order to drain the chest cavity. The severed muscles were drawn together and held by cable sutures, to prevent the contraction and opening of the wound. The skin was drawn together at a few points only, being left open sufficiently to protect the transplanted muscles from infection.

Subsequent History.—Primary union of the transplanted muscle was secured, and the chest closed. The emphysema was enormous the first 24 hours, extending to the scalp above and the knees below, but disappeared in 48 hours. The thumb and fingers were amputated after the wound was dressed. The patient was about in a roller chair in two weeks. At the end of three weeks secondary

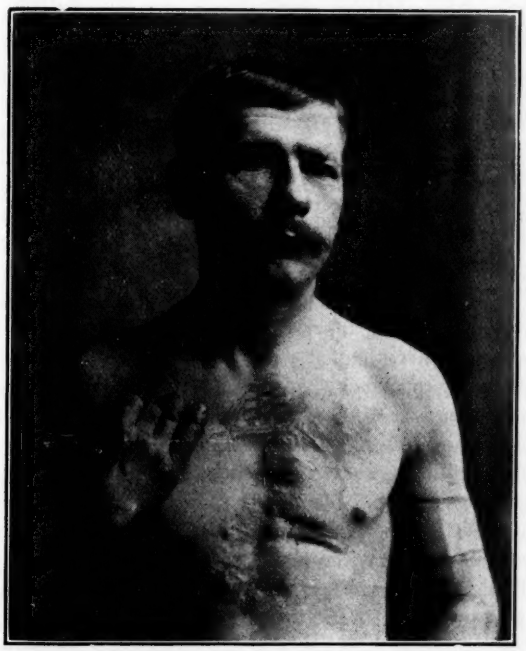
suturing of the skin was done, and at the end of six weeks the patient had recovered except for a small fistulous skin wound over one of the ribs. In all there were something like 180 buried sutures and ligatures used. The time consumed in picking out the wood fibers, grease, making the wound aseptic and repairing the injury was five hours.

To summarize, the striking features of this case are:

(1)—The extent of the injury.

(2)—The extensive exposure of lung and pericardium, and the puncture of the lung.

(3)—The complete destruction of all costal pleura over an area of about 2½ or 3 inches in width by 4 or 5 inches in length.



(4)—Successful substitution of muscle for pleura by transplanting.

(5)—No adhesions or restriction of lung expansion.

The accompanying photograph of the patient, taken one year and four months after the injury will give an idea of the extent of the injury. The multiple keloids seen in the skin are due to severe scratching by the saw teeth before entering into the deep structure. The upper end of the scar shows much lower than where the cut actually was. This is due to the contractions and to the fact that the upper skin margin was drawn down and made tenser than the lower flap. All the scar on the abdomen is not shown accurately.

STOMACH SURGERY.

There are a few fundamental principles which must be observed in order to secure permanently satisfactory results:

1. The amount of traumatism must be reduced to a minimum.

2. The intraabdominal organs must be exposed as little as possible to cold air or cool pads.

3. The patient must be placed in a sitting posture as soon as possible after the operation.

4. In case of closure of perforation, the direction of the wound must be chosen so as not to result in obstruction later as a result of cicatricial contraction.

5. In case of excision of a neoplasm, all the tissue closely connected must be removed with the growth to the greatest extent possible in the presence of existing anatomical relations.

6. In gastroenterostomy the lowest portion of the stomach must be chosen, no matter whether anterior or posterior gastroenterostomy be performed, the latter however being preferable.

7. There must be no tension upon any sutures in any gastric operation.

8. Except in complete gastrectomy, the coronary artery must always be preserved.

9. In patients with an unusually fat transverse mesocolon, in whom posterior gastroenterostomy is performed, the opening should be torn very large and the edge should be sutured to the stomach in order to prevent obstruction.

10. In case of acute gastric dilatation following any stomach operation, a stomach tube should at once be introduced and gastric lavage be employed, care being taken not to introduce more than one-fourth liter of water at a time.

11. The simplest possible technic should be employed, preferably without the use of mechanical apparatus.—A. J. OCHSNER in *The Interstate Medical Journal.*

EARLY DIAGNOSIS OF GASTRIC CARCINOMA.

The greatest strides made in recent times in the recognition of early cases of gastric carcinoma have been limited to the laboratory and surgical phases of the subject. The clinical significance of the laboratory findings, however, differs according to different observers; they are not to be isolated from the symptoms and course of the disease, but judiciously balanced and compared with the clinical characteristics and the steady progression with occasional slight remissions of the disease.—JAMES M. ANDERS in *The New York Medical Journal.*

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WALTER M. BRICKNER, M.D., Editor

NEW YORK, FEBRUARY, 1909.

ANNOUNCEMENT.

It affords us much pleasure to announce that Dr James P. Warbasse, formerly Editor of the *New York State Medical Journal,* has joined the staff of the AMERICAN JOURNAL OF SURGERY as Special Editor.

An experienced surgeon and a trained medical journalist, his contributions to our editorial pages will, we are sure, be welcomed by our readers.

RECENT STUDIES OF HEMOLYSIS IN ITS RELATIONS TO MALIGNANT GROWTHS.

Serum pathology has developed that certain interesting phenomena—corpuscular agglutination and lysis—sometimes occur as the result of mixing the red cells from the blood of one individual with the serum from another, or, occasionally, the same individual; and in many laboratories attention is directed to-day to the study of the significance of these phenomena and the conditions under which they occur.

Fresh impetus has been given to these investigations, from the therapeutic side by the necessity for making blood tests before performing transfusion, and from the diagnostic side by the demonstration that the development of an (iso)hemolytic property in blood serum is a phenomenon *largely* limited to certain usually severe diseases, and especially common in cases of cancer.

Among the important contributions to the subject are those of Ascoli in 1901, and, more recently, those of Kelling, Crile and, especially, Weil. Ascoli[1], among others, found that in some diseases, among them cancer, the serum agglutinated the corpuscles of normal individuals, and that the corpuscles from another individual with the same disease resisted this action. He also found that normal blood serum was not hemolytic, and that this was also true of the serum he tested from individuals with various diseases, e. g., rheumatism, nephritis, gastritis. But in a large number of cases of tuberculosis and of pneumonia, and in two cases of gastric cancer he found the serum markedly hemolytic. Eisenberg is reported to have found hemolysis in a large percentage of cases of scarlatina, typhoid and syphilis. Kelling[2] found that in 43 per cent. of the cases of cancer tested by him the serum was lytic to the corpuscles of sheep, cows and chickens, and that this obtained in less than 4 per cent. of other disease sera tested.

Richard Weil, after experimenting with the tissues of dogs affected with transplantable lymphosarcoma, reported[3] that fresh extracts made from undegenerated tumors and from most of the dogs' normal organs were slightly lytic to the corpuscles of other dogs, and more so when there was added an extract of red blood cells; and that extracts of necrosed portions of the tumors were very markedly hemolytic without the aid of any complement. To determine whether this action was due to autolytic products in the broken-down tumors, he experimented with extracts of dogs' organs artificially autolyzed *intra vitam* and outside of the body, and found that these extracts were likewise markedly hemolytic. These findings strongly support the belief that the cachexia and anemia of malignant growth are due to a specific toxic action developed by necrobiosis of the tumors.

Weil next undertook to determine whether the circulating blood itself of dogs suffering with lymphosarcoma would show the presence of this toxic material. He adopted a new method of studying hemolysis, including observations not only of the reaction of the serum, but also of the resistance of the corpuscles to that serum. He found[4] that "the serum of all the tumor dogs is distinctly more homolytic than is the serum of non-tumor dogs"

. . . and . . . "the corpuscles of the tumor animals are always more refractory than are the normal; they break down less rapidly and less completely."

Upon the completion of these animal observations Weil made a series of tests of the blood of cancer patients[5], employing the same double reaction. He found that the serum hemolyzed alien, but not its own corpuscles ("positive reaction") in 40 per cent. of early and 56 per cent. of late malignant tumors, 33 per cent. of benign tumors and 26 per cent. of other diseases. In a general way these results correspond with those of subsequent observers whose percentages of positive reactions, however, vary within a fairly wide range.

H. H. Janeway[6], following Weil's method, has just reported positive reactions in 57 per cent. of early and 40 per cent. of late carcinomata; negative reactions in all (10) cases of rodent ulcer, except one advanced case; negative reactions in all normal sera; marked hemolysis in one case of chronic mastitis.

A. S. Blumgarten[7], also working on the plan formulated by Weil, but with a slight elaboration which, he thinks, accounts for the higher percentage in cancer sera, reports a positive reaction in 18 of 25 advanced cancer cases (72%), in 4 of 40 other diseases, and in 1 of 10 presumably normal cases.

Crile[8], likewise employing Weil's method, claimed that in all early cases of malignant growth the serum is hemolytic and the corpuscles are resistant to their own or other cancer serum, that these reactions are very delicate, and that they disappear as the tumor progresses. Weil, whose attitude in all his reports has been very conservative, is unwilling to accept all of Crile's findings. Janeway and Blumgarten also are skeptical of the accuracy of his technic. In a later paper[9] Crile reported observations on the red cells and serum of 600 patients—normal and variously diseased. He and his laboratory assistants found hemolysis 7 times in 71 pyogenic infections, 48 times in 52 cases of tuberculosis, 130 times in 153 cancer cases; in all of 11 post-operative cancer cases with recurrence, and in none of 37 post-operative cases without signs of recurrence.

The most striking finding in this last report of Crile's is that all cases of tuberculosis showed reverse hemolysis, *i. e.*, of the patient's corpuscles by normal serum. Since tuberculosis is, next to cancer, the disease in which, it would seem, hemolysis most often occurs, this reverse reaction would serve to differentiate diagnostically. But Crile's finding in this particular must first be corroborated. Perhaps his adoption of a technic departing from that of others will account for his results with tuberculosis and his high percentages in cancer.

These studies have thrown light on the cause of cachexia in malignant growths, they have opened up a wide field of observation and of speculation, they have suggested the possibility of securing a diagnostic blood reaction. But they also show that hemolysis, as we thus far understand it, is by no means a specific reaction. There will need to be considerable elaboration of technic before it can be raised to the dignity of a diagnostic test, and then much simplification of technic to make that means of diagnosis generally available. W. M. B.

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[1] Muenchener Medizinischer Wochenschrift, 1901, p. 1239.
[2] Berliner Klinische Wochenschrift, 1907, p. 1355.
[3] Journal of Medical Research, 1907, XVI, 287.
[4] Archives of Internal Medicine, January, 1908.
[5] Journal of Medical Research, October, 1908, Vol. XIX, 2.
[6] Annals of Surgery, January, 1909.
[7] Medical Record, January, 1909.
[8] Journal of the American Medical Association, 1908, 1; 1888, 61, 158.
[9] Journal of the American Medical Association, December 12, 1908.

ANNOUNCEMENT.

The next issue of the AMERICAN JOURNAL OF SURGERY will be a special Greater New York number devoted to contributions, many of them written for the occasion, by New York City surgeons.

Among these articles will be the following: "A New Method of Intestinal Resection," describing a bold and very simple means of closing the cut ends of the bowel, by Howard Lilienthal; "Carcinoma of the Breast," by Willy Meyer; "Sigmoiditis and Perisigmoiditis," by James P. Tuttle; "A New Method of Blood Transfusion," by John A. Hartwell; "On the Avoidance of Hemolysis in Transfusion," by Richard Weil and Martin Rehling; "A New Operation for the Correction of Retrodeviation of the Uterus," by John Van Doren Young; "Fibrosis Uteri and Its Surgical Treatment," by Samuel W. Bandler; "Dislocation of the Cervical Vertebræ," by James P. Warbasse; "A Modified Operation for Inguinal Hernia," by Albert E. Sellenings; "Plastic Mastoid Operation; a New Operation for Acute Mastoiditis," by T. F. Hopkins; "On the Surgery of Foreign Bodies, with Especial Reference to those in the Skeletal Tissues—Methods of Localization and Removal," by Walter M. Brickner.

Surgical Suggestions

W. M. B. H. M. H.

Dryness of the pharyngeal wall is usually associated with an atrophic rhinitis.

The best point for entering the maxillary antrum is about one inch from the edge of the nostril, below the inferior turbinate.

There is less likelihood of injuring the deeper vessels in excising tonsils if the instrument is pressed in deeply to engage the organ rather than exerting pressure from the outside.

Hard tonsils preponderating in connective tissue, are better removed by the cold snare than by a sharp instrument. The snare closes the blood nerves; the tonsillitome opens them.

An hypertrophied lingual tonsil sometimes causes much discomfort, giving a heavy, sore feeling to the base of the tongue. It may be necessary to remove it.

The differentiation between a specific and tuberculous ulcer of the fauces is sometimes very difficult. As a rule the specific ulcer is shallow, grayish, with a regular margin, not very tender and does not cause dysphagia; on the other hand, a tuberculous ulcer is deeper, more sloughy, irregular in outline, has an outer inflammatory zone, is exquisitively tender and causes great pain on swallowing; laryngeal examination may reveal a tuberculous condition of the cords.

Suppurating arthritides do not always require exposure of the joint or even large incisions, irrigation and drainage. Such treatment invites mixed infection and ankylosis. If the pus be very thin—even though of streptococcic origin—thorough *aspiration* (which may need to be repeated) and immobilization may effect a rapid cure with perfect function. Purulent arthritis and periarthritis as it occurs in small children as a complication of one of the exanthemata (often in connection with trauma) is often quite amenable to conservative, and even ambulant treatment: aspiration, or irrigation and drainage, and immobilization. Judgment is needed, of course, to determine what cases are amenable to this conservative surgery, and what point in the treatment it must be abandoned in favor of more extensive intervention.

Book Reviews.

Pulmonary Tuberculosis and Its Complications. With Especial Reference to Diagnosis and Treatment for General Practitioners and Students. By SHERMAN G. BONNEY, M.D., Professor of Medicine, Denver and Gross College of Medicine; Visiting Physician to St. Luke's Hospital, Denver. Octavo; 778 pages; 189 illustrations (20 in colors). Philadelphia and London; W. B. SAUNDERS Co., 1908. Price, cloth, $7.00 net; half morocco, $8.50 net.

In his attempt to render this work as practical as possible, the author has reduced the bacteriological and pathological aspects to a minimum. On the other hand, 139 pages are devoted to the symptoms and physical signs. These phases of the subject are discussed exhaustively. Diagnosis is attended to in 64 pages, especial attention being paid to the *x*-ray, a method of diagnosis upon which the author places great value. Although the experience of the author in regard to the conjunctival reaction of Wolff-Eisner is small, he is convinced of its value in doubtful cases. A section on prognosis of 24 pages covers the ground exceptionally well. The succeeding sections, consisting of 235 pages, deal with all the phases of tuberculosis of the organs of the body.

It is gratifying to note that the author is well versed in the indications and methods of surgical treatment. He is right in emphasizing the value of the all too neglected open air methods in the treatment of surgical tuberculosis. The final section of 112 pages is devoted to prophylaxis and treatment of pulmonary tuberculosis. The author devotes much space to the social aspects of the consumptive, and the administrative supervision, and education, both of himself and of the public. The varieties and methods of open air treatment are thoroughly discussed, and especial attention is paid to the proper construction of open air habitations. The methods of open air treatment in the patient's own home are, however, not neglected. The climatic conditions of the various sections of this country that have been recommended for the consumptive are concisely summarized and the dietetic considerations are given due importance.

The author has little use for drugs except in the treatment of symptoms. He has had a large experience in the therapeutic use of tuberculin and bacterial vaccines, and is convinced of their benefit in certain cases. He has little or no use for the opsonic index as a guide to the dosage.

The only defect that we have noted in this work is a certain diffuseness of expression and a lack of sufficient head-lines or italics to break the monotony of page upon page of text. Only one important omission of clinical importance has been noted, namely, the lack of mention of choroidal tubercles in the diagnosis of acute miliary tuberculosis. The illustrations are of unusual excellence and very profuse; in fact, many of these appear to us entirely unnecessary. The value of the book would be somewhat enhanced by the introduction of references to the literature.

All in all, this is one of the best works on the clinical aspects of pulmonary tuberculosis with which we are acquainted.

Diseases of the Skin and Eruptive Fevers. By JAY FRANK SCHAMBERG, M.D., Professor of Dermatology and Infectious Eruptive Diseases in the Philadelphia Polyclinic and College for Graduates in Medicine, etc. Octavo; 534 pages; illustrated. Philadelpia and London: W. B. SAUNDERS COMPANY, 1908. Price, $3.00 net.

The numerous text-books on Diseases of the Skin leave very little to be desired in the way of new books of this kind. Schamberg's work, however, possesses distinctive features that make it especially useful. We refer especially to the excellent chapters dealing with the skin manifestations of the exanthemata and of those acute infectious diseases, such as typhoid and meningitis, with which eruptions are often associated.

The book is not as large as it would be if skin diseases were treated exhaustively. The author has dealt with them

chiefly from the clinical viewpoint, pathology being but briefly considered.

The illustrations, without which a book on skin diseases would be of little value, are an excellent aid to diagnosis, being mostly photographic and well reproduced. Color reproductions, however, would have added much to their usefulness. Typographically the book looks well.

Seven Hundred Surgical Suggestions. Practical Brevities in Diagnosis and Treatment. By WALTER M. BRICKNER, B.S., M.D., Assistant Adjunct Surgeon, Mount Sinai Hospital; Editor-in-Chief, AMERICAN JOURNAL OF SURGERY, New York; ELI MOSCHOWITZ, A.B., M.D., Assistant Physician, Mount Sinai Hospital Dispensary, Associate Editor, AMERICAN JOURNAL OF SURGERY, and HAROLD M. HAYS, M.A., M.D., Associate Editor, AMERICAN JOURNAL OF SURGERY. *Third Series.* Duodecimo; 150 pages. New York: SURGERY PUBLISHING COMPANY. 1909.

The earlier editions of this little book ("Surgical Suggestions," 1906, "500 Surgical Suggestions," 1907) proved very popular and their contents were widely quoted In this series about two hundred new "Suggestions" have been added to those previously published. While these seven hundred paragraphs represent only random observations in surgical diagnosis and treatment, they cover, when thus gathered and arranged, a great deal of useful information, not ordinarily found in the text-books.

This enlarged issue of what the authors have termed "diagnostic hints and therapeutic wrinkles" ought to continue the popularity of its predecessors, like which, it is printed and bound very tastefully.

Diseases of the Genito-Urinary Organs and the Kidney. By ROBERT HOLMES GREENE, A.M., M.D., Professor of Genito-Urinary Surgery, Medical Department at Fordham University; Genito-Urinary Surgeon to the City and to the French Hospitals, N. Y. City; and HARLOW BROOKS, M.D., Assistant Professor of Pathologic Anatomy, University and Bellevue Hospital Medical School; Visiting Physician to the City Hospital, N. Y. City. *Second Edition.* Octavo; 605 pages; 275 illustrations. Philadelphia and London: W. B. SAUNDERS Co., 1908. Price, cloth, $5.00, net; half morocco, $6.50, net.

The first edition of this work was reviewed in our issue of January, 1908. We are glad to note in this edition a considerable improvement over the first, and the incorporation of much that is new and important in urology. The work has been enlarged by about 70 pages, representing for the most part entirely new matter.

A Reference Hand-Book of Gynecology for Nurses. By CATHARINE MACFARLANE, M.D., Gynecologist to the Woman's Hospital of Philadelphia. 32 mo; 150 pages; 68 illustrations. Philadelphia and London: W. B. SAUNDERS COMPANY, 1908. Flexible leather, $1.25.

This is a pocket manual of the technic of gynecological nursing, admirably prepared.

Books Received

Surgery of the Upper Abdomen. In Two Volumes. By JOHN B. DEAVER, M.D., LL.D., Surgeon-in-Chief to the German Hospital, Philadelphia, and ASTLEY PASTON COOPER ASHHURST, M.D., Surgeon to the Out-Patient Department of the Episcopal Hospital, Philadelphia. Vol. I: Surgery of the Stomach and Duodenum. Octavo; 468 pages; 76 illustrations. Philadelphia: P. BLAKISTON'S SON & Co., 1909. Price, $5.00, net.

Taber's Pocket Encyclopedic Medical Dictionary. Edited by CLARENCE W. TABER, Author of "Taber's Medical Dictionary for Nurses, "The Secret of Sex." etc. Associate Editor, NICHOLAS SENN, M.D., Ph.D., LL.D., C.M., Late Professor of Surgery, University of Chicago, etc. 16 mo; 418 pages. Leather bound. Chicago: C. W. TABER, 1908.

Progress in Surgery.

A Résumé of Recent Literature.

A New Method for the Transfusion of Blood. (Preliminary Communication.) ROBERT T. FRANK, New York. *New York Medical Journal,* November 28, 1908.

Noting that the Crile and Carrel methods of transfusion are attending with considerable technical difficulty. Frank has devised a method by which the extensive dissection and manipulation of the artery is avoided. The essential feature of this method consists in the use of a connecting link, derived from the carotid artery of a dog. About 2½ to 3 inches of the carotid artery are removed and immediately plunged into sterile salt solution. The artery is then milked of its contained blood and thoroughly washed. The adventitia is there stripped back at each end, and each of these ends is drawn through and cuffed and tied over a Crile or other convenient canula. If obtained aseptically and kept at 33 degs. F. in normal salt solution, these prepared links can be preserved for at least one week.

About one inch of the artery of the donor—in man the radial—is exposed under local anesthesia, but no great care need be exercised in freeing the vessel from its sheath. A silk ligature is passed beneath the artery, but not tied. A vein, selected in the recipient, is laid bare in the same manner and a ligature passed. A serre-fine or Langenback hare-lip clamp is placed at the central exposed portion of the artery and at the distal part of the vein, to stop the circulation. The artery is now pulled out of the wound by means of the ligature, and with one snip of the scissors a small transverse slit is made into its lumen. The edges of this slit are drawn apart by the operator and his assistant with curved eye forceps. Through this aperature one end of the cuffed link is introduced, toward the heart, and the silk ligature is tied in the first or lower groove. The vein is treated similarly, and the opposite end of the cuffed link is inserted toward the heart and secured in place by the ligature. The serres-fines are now removed and the transfusion allowed to proceed. Throughout the manipulation both wounds should be kept well moistened with salt solution. While the transfusion is in progress the link must be supported by a gauge sponge, saturated in salt solution and covered by another moist compress.

After the exchange of blood has been effected, both artery and vein are tied off with catgut, above and below the small slit made, and the injured portion excised.

The preparation of the link can be performed anywhere where aseptic procedure can be carried out; but further experiments are now in progress, looking to their more permanent preservation. If these efforts should prove fruitful it might be feasible to keep them on hand for an emergency, just as suture material is now preserved.

Frank has thus far found that the use in this manner of a well washed alien blood vessel entails no danger of hemolysis or clotting.

Results of the Transplantation of Bloodvessels, Organs, and Limbs. A. CARREL, New York. *Journal of the American Medical Association,* November 14, 1908.

Carrel gives an account of the experimental work on animals in auto- and heterotransplantation of vessels, organs, etc. He shows that vascular suturing, under aseptic conditions and correctly applied, gives excellent results, but a fault of technic, even very slight, can be followed by obliterative thrombosis. Success depends less on the way of handling the needles or passing the threads, than on a knowledge of the causes determining a deposit of fibrin in the line of anastomosis, and their removal. Occasionally after transplantation of veins as a substitute for arteries, late obliteration may occur, hence this procedure seems to be a little less safe than the direct anastomosis of artery with artery. Carrel finds it possible, however, to preserve the vitality of extirpated arteries in Locke's solution at low

temperature for some days or weeks, so that good results can be obtained after transplantation, though marked histologic changes take place. Other methods have been less successful. It is not always true, moreover, that the transplanted vessel must be from the same species of animal, but the success is greatest when the species are most closely related. Experiments with transplantation of various whole organs, such as the kidney and spleen, with re-establishment of their circulation by vascular anastomosis, have also been successful and transplanted kidneys have functionated normally. In case of glands like the thyroid, parathyroid and ovaries, the re-establishment of the circulation by anastomosis is hardly necessary, though in case of the ovary it might be advantageous. In heterotransplantation of the intestines the difficulty is to avoid infection which caused the failure of both of Carrel's experiments of this nature. Heterotransplantation of rather extensive anatomic regions such as the ear and scalp, with their artery and vein has been successfully done in a dog, and Carrel has succeeded in transplanting a leg from one dog to another. The difficulties here are chiefly surgical, and he says if further experiments in this line sufficiently demonstrate that the functions of the transplanted limb are re-established, it may be permissible to try this operation in a suitable case on man. In a general way, however, it is necessary to emphasize that even a method that gives excellent results on animals must not be directly applied on man. There are marked anatomic and physiologic differences between the human tissues and organs and those of the dog and cat, and the methods should be modified accordingly. The experiments he records have been performed within the past two years and it is too soon to tell what may be their practical value.

Physiological Aspects of Bloodvessel Surgery. C. C. GUTHRIE, St. Louis. *Journal of the American Medical Association,* November 14, 1908.

Guthrie describes the technic and results of his experiments in the union of blood vessels. Essentially, the methods are the same as those of other successful investigators, viz., gentle handling of the vessel, with protection from drying, smooth approximation of the intimal surfaces and fixation by needles and thread in proportion to the size of the vessels. The exposed vessel is occluded by properly guarded forceps, the edges to be sutured are cut smoothly with small, sharp scissors, excess of blood is stripped out with the fingers, and absorbed with a soft, dry sponge, the loose connective tissue coat is snipped off and to prevent drying the vessel is coated inside and out with paraffin oil. Two or more ligatures are then passed through corresponding points on the circumferential margins of the two ends of the vessel and tied, thus approximating the cut surfaces. The walls are then further united by a continuous suture encircling the point of union, each stitch passing through the intima on either side a little way from the cut edge. To facilitate handling and to aid in restraining coagulation, the threads are kept in paraffin oil. The chief difference in the methods with arteries and veins is that in arteries the stitches are placed closer together than in veins. The needles for small or medium-sized vessels are No. 16 cambrics; the thread is one of the six component strands of Chinese twist silk. On restoring the circulation, some hemorrhage will occur from the needle holes, but this is stopped as a rule after compression of the point of union for a minute or two, by the deposit of fibrin in the holes. There is probably more or less clotting inside the vessels in all cases after the operation, but unless there is some gross fault, the circulation is usually restored. The smaller the vessel the greater the chance of failure; vessels of less than 2 mm. are less easily handled than larger ones. Excessive traction is to be avoided, if the gap is too wide, the most feasible method perhaps, is to interpose a suitable segment of some non-essential vein between the ends of the divided vessel. Other transplantations may also be used, and have given good functional results. Following up this line of work, Guthrie has applied the same principles to the transplantation of tissues and the results have so far demonstrated that the transplantation of limbs is feasible in dogs. He also transplanted dogs' heads with preservation of cerebral and bulbar function. The question of the injurious action of the so-called "physiologic solutions" employed in lengthy experiments of this nature is discussed. It is possible to transplant the legs or heads of dogs so quickly that perfusion is unnecessary. In the case of the kidneys, however, this factor has seemed to him a bar to permanent success, and he is now investigating the influence of various solutions used for perfusion, as well as the effect of clamping the arteries on the kidneys. Thus far he has used cats, with striking but apparently not specially favorable results. Guthrie has also experimented with artificial hyperemia of the thyroid by reversing the circulation in the veins, producing a maximum arterial and venous hyperemia.

Condition of the Peripheral Bloodvessels in Shock. M. G. SEELIG and E. P. LYON. *Journal American Medical Association,* January 2, 1909.

Seelig and Lyon, after reviewing the various theories of shock, give an account of experiments undertaken by themselves to determine whether the peripheral vessels are contracted or dilated during the time the pressure is low in the larger more centrally located vessels, such as the carotids. They studied visually the retinal vessels and measured the outflow of the temporal vein. They found that the proportional rate of flow from the vein during shock was more rapid after division of the sciatic, thus showing that the section of the nerve caused vasodilatation of the vessels of the leg, just as it does in an unshocked animal. This dilatation, however, is proportionately greater than it is in a normal animal and the difference must be accounted for assuming that in the shocked animal, before division of the sciatic which contains the chief vasomotor nerves of the leg, the vessels are more contracted than they are in the normal animal. That is to say, that in shock, with the vasomotor impulses unimpaired, the peripheral vessels are more contracted than normally. In the retina, where the uninjured vessels are open to inspection, the indications were the same. The ophthalmic examinations were made for the authors by Dr. John Green, Jr., who was requested to examine the fundi of the dog's eyes, before and after the shock, and to note carefully the size of the vessels. In every instance he reported that the vessels showed a marked degree of contraction after the animal was in shock, contracting down to one-third to one-half their size before shock. The authors do not claim to offer any explanation of the causes of shock, but simply to demonstrate that the peripheral vessels are contracted, which necessarily implies that shock can not be due to exhaustion of the vasomotor centers. If their results are confirmed, then the doctrine that shock is due to vasomotor exhaustion must be revised.

Cranial Technic. FRANK HARTLEY, New York. *Journal American Medical Association.* January 9, 1909.

Hartley enumerates the following as the prime requisites for avoiding the dangers of shock and sepsis in operations on the brain: 1. Instruments which will open the skull quickly over any desired area and to any extent. These are the motor, saw and guard, osteotome, drill, fraise and measure. 2. A method of craniocerebral topography permitting an accurate exposure of the desired area. Chipault's is the best method, adapted to the skull of all ages, races or individual peculiarities. 3. Osteoplastic flaps cut so that they will expose the desired area in the easiest manner. 4. The replacing of the bone flap in every possible case or the covering the defect with an accurately fitting foreign material (celluloid or aluminum). He prefers autoplasty when possible. 5. The most perfect hemostasis in the preliminary as well as in the final steps of the operation. The operation he divides into two steps, the first concerned only with the skull, the final with the dura and brain. All drugs should be given up several days before operating, and a record of pulse rate and blood pressure should be taken twenty-four hours before operation. The patient's head is raised on the table between 15 and 30 degrees, which Hartley has found sufficient to stop venous bleeding and lower arterial pressure. He has not been able to compare the effects of Crile's rubber suit and carotid compression or of Dawbarn's sequestration-anemia with

this, but if they will improve the arterial pressure better than elevation and with no greater danger of inducing sudden syncope, he will certainly use them. During the operation he would have the blood pressure recorded by the anesthetist by a sphygmomanometer on the arm, as a sudden fall will warn the operator of any impending sudden collapse, and will probably enable us to avoid the 25 per cent. of sudden deaths following prolonged operations. The details of the two steps of the operation are given and the necessity of careful hemostasis during the second stage emphasized, as well as the importance of avoiding infection of the lateral ventricles. Possible later complications are: 1. Shock, in prolonged operations with hemorrhage or after large tumors have been removed and the cerebral statistics disturbed by the space left. In such case the acute cerebral edema of von Bergmann occurs. To avoid this Hartley tampons and gives counter-pressure through the flap. 2. Hyperpyrexia: This occurs after both severe and moderate handling of the brain, especially if the ventricles have been opened, and is due to toxicity of the neoplasm secretion, infection or irritation of thermic centers in the bulb. 3. Encephalomeningitis may be due to injury or to infection from the patient's blood or without. It usually appears during the first month after operation, coming on slowly with localized convulsions, contractures, paralyses, somnolence, mental torpor or delirium. 4. Hernia may be present at the time of operation as a tumor of the base or as a voluminous tumor of the centrum ovale, or at a later period in the form of encephalitis.

Reactions of the Labyrinth and Their Significance in the Diagnosis of Suppurative Labyrinthitis. G. E. DAVIS, New York. *Journal of the American Medical Association,* November 21, 1908.

Davis says that since 1905 it has been possible to make an absolute diagnosis of complete destruction of the labyrinth from suppurative labyrinthitis, and he enumerates and describes the signs and symptoms by which this can be done, according to their relative diagnostic importance, as follows: 1. Total deafness of sudden onset. This symptom is important, but has been somewhat uncertain because of the difficulty in excluding hearing by the other ear. Barany, however, has constructed an apparatus with which one can definitely determine total deafness on one side. It consists of a hollow conical speculum traversed by two tubes—one for the inflow and the other for the outflow of water—and a third tube for forcing air with the water. With this, great noises can be produced in the sound ear while the other remains totally deaf, but when used on a normal person it does not interfere with hearing in the opposite ear. 2. Intense vertigo of sudden onset, lasting from two to five days on the average, and sometimes of such severity as to make the patient hold on to objects to prevent falling. It may also be accompanied with nausea and vomiting. 3. Rotary nystagmus to the sound side. This symptom is important, especially when combined with nystagmus and vertigo. It is best observed by having the patient look straight ahead and elevating the upper lid. It is marked and observable in all positions of the bulb and lasts, as a rule, for a few weeks, when it gradually disappears. 4. Non-irritability of the labyrinth to thermal irritation (caloric test). Syringing the ear in normal persons with cold water causes rotary nystagmus to the opposite side, while syringing with water ten or more degrees warmer than the body temperature causes rotation to the same side. When, with the previously described symptoms, we find this lacking, we have an important and negative sign of acute destruction of the labyrinth. 5. Reactions by turning. According to Barany, normal persons, after being turned ten times in the revolving chair to one side with the head bent forward 90 degrees, will show rotary nystagmus to the opposite side, lasting on the average from 18 to 20 seconds—so-called after-nystagmus. In acute and latent cases of one-sided labyrinth destruction we find the duratoon of the after-nystagmus reduced to 8 seconds or less. 6. Galvanic reaction. By applying the cathode to the ear directly in front of the tragus and the anode in the patient's hand, a rotary nystagmus to the same side will occur with a current of from two to seven milliamperes, and with the poles reversed to the opposite side. In case of labyrinth destruction a current of from ten to sixteen milliamperes is required to cause this reaction. 7. Disturbances of equilibrium. In acute cases of one-sided labyrinth suppuration, as has been pointed out by Alexander, Barany and others, there are marked and typical disturbances of equilibrium, the patient tending to fall toward the diseased side. The symptom gradually diminishes after the first few days, but never entirely disappears. In cases of acute labyrinth suppuration there are always more or less symptoms of meningitis, such as fever, diffuse headaches, sensitiveness to percussion and stiffness at the back of the neck, and not infrequently more or less choked disc. In cases of acute labyrinth suppuration it is better and safer to remove the labyrinth at the time of the radical operation, although the facial canal remains intact, as the radial operation alone enhances the pathologic conditions in the labyrinth and greatly increases the danger of meningitis. Unless one can remove the labyrinth, no operation is advisable, in Davis' opinion, in preference to the radical operation alone. The best method of removing the labyrinth is to make wide exposures of the sinus and meninges, uniting the middle and posterior fossæ as advised and practiced by Alexander, who also incises the dura in both fossæ to insure better drainage.

The Surgery of the Auditory Labyrinth. CHARLES M. STEWART. *Canadian Journal of Medicine and Surgery.* January, 1909.

Within recent years, the knowledge of the surgery of the auditory labyrinth has been increased by Jansen, J. D. Richards of New York, and Richard Lake of London.

Attention to disease of the labyrinth is most important for a great many mastoid cases have turned out fatally because the surgeon has neglected to search for labyrinthine disease when he was doing the radical mastoid operation.

The vestibule is the seat of the greatest pathological activity. The infection takes place either from the foramen ovale or from an erosion in the external semicircular canal as it lies in the inner wall of the aditus. Death in labyrinthitis is due to intracranial complications—either meningitis or abscess of the brain. The tract of infection is usually along the filaments of the auditory nerve, and in this way the subarachnoid space becomes infected. Bezold has estimated that labyrinthitis occurs in 1-500 cases of chronic suppuration of the middle ear.

It is impossible to definitely diagnose labyrinthitis before operation. Symptoms pointing to labyrinthine involvement may be well marked and yet at the time of the radical mastoid operation, the labyrinth is found perfectly intact. It is a serious matter to explore a healthy labyrinth in an infected area, such as in a mastoid operation. When doing a radical mastoid operation, the external wall of the labyrinth should always be carefully searched for fistulæ. The external semicircular canal just opposite the aditus is a common seat of a fistulous opening.

Symptoms which are useful in labyrinthine diagnosis are nystagmus, vertigo and disturbances in equilibrium.

The patient is never conscious of nystagmus. Pressure on the stapes will produce the condition if the labyrinth is healthy. It has been found when syringing the middle ear with cold water, the eyes turn to the opposite side from the disease, and with warm water to the same side as the disease. In gross lesions of the labyrinth it is impossible to produce nystagmus with heat or cold. The vertigo is produced by the abnormal stimulation to the specialized end organs in the maculæ and cristæ of the vestibule and semicircular canals. Cochlear lesions give rise to deafness. Romberg's sign is usually present, the patient walks with the feet wide apart, sways considerably and has a tendency to go to the affected side. Facial paralysis occurring in a case of suppurative otitis media is not uncommonly due to destructive changes in the aqueduct of Fallopius.

Lumbar Puncture in Otology. SEYMOUR OPPENHEIMER. *New York Medical Journal.* December, 1908.

In the great majority of aural affections seen by the otologist, the admissibility of lumbar puncture as a diagnostic aid need not be considered. That lumbar puncture as a diagnostic agent in some of the intracranial compli-

cations of suppurative otitis has a decided value has been repeatedly demonstrated, not only in greatly aiding in the recognition of a meningitis, where it gives positive evidence of the condition present, but it is of value in a negative aspect. The negative aspect indicates the absence of meningitis of any extent and thus eliminates this factor from the conditions suspected of being present.

Quantitatively one may obtain some evidence of the presence of increased intracranial pressure by an excessive amount of fluid escaping through the canula employed in making the puncture, but this evidence is of little or no value in the conditions met with as aural complications, although some value should be attached to the escape of the fluid under apparently high pressure as undoubtedly indicating increased tension.

In the distinctive diagnosis of a possible brain tumor from that of a brain abscess, or extradural collection of pus limited in extent and thus circumscribed, little or no information can be obtained and the withdrawn fluid is practically the same in both these conditions. As long as the pus collection, irrespective of its location, remains circumscribed, and the arachnoid space is not invaded by the purulent process, practically nothing can be gained as an added diagnostic feature by lumbar puncture, but where the diagnosis from other conditions seems difficult, one may gain some added negative information, as the fluid in these two conditions is frequently released under abnormally high pressure and may also be more abundant than usual.

The Diagnostic Value of Cutaneous Hyperalgesia (Head Zones) in Abdominal Disease. C. A. ELSBERG and H. NEUHOF, New York. *American Journal of the Medical Sciences,* November, 1908.

After a careful study of a large series of cases, in all of which their observations were confirmed by operation findings, the authors conclude as follows:

1. We agree in the main with the statements of Head, that there are present, in many affections of the abdominal viscera, constant and definite areas or zones or cutaneous hyperalgesia.

2. These zones may vary somewhat in extent and in outline, but they have a characteristic location.

3. The presence of a characteristic zone is an evidence of an affection of the corresponding abdominal viscus, although not of necessity the affection which is causing the symptoms.

4. The zones are present in a large percentage of patients with acute affections of the appendix, of the gall-bladder, of the uterine adnexa, and are of considerable value in the diagnosis of these acute affections.

5. Zones are frequently present in acute disease of the other abdominal viscera, and when present aid in making the correct diagnosis.

6. Cutaneous hyperalgesia may appear early in acute abdominal disease. Its presence is no index of the gravity of the lesion. Its sudden disappearance may be of grave significance.

7. In the absence of all other localizing signs or symptoms, the zone may indicate the organ that is affected. In most instances, however, it must not be used to make the diagnosis, but only as a diagnostic aid, to substantiate conclusions reached from a consideration of all the symptoms and signs.

Obstetrical Paralysis. A Preliminary Report of Two Cases Treated by Nerve Dissociation. KARL OSTERHAUS, Norfolk. *New York Medical Journal,* November 7, 1908.

Acting upon the principle of making the scar tissue serve as a guide for the regeneration of nerve fibrils, the author performed the following operation upon two cases of obstetrical paralysis. After exposing the plexus, the nerve sheaths are exposed above and below the junction for a considerable distance; the fibers constricted by the cicatricial tissue are then dissociated by a small sharp tenotome. The nerves are then loosely wrapped in Cargile membrane and the wound is closed. In both patients the results were both rapid and highly satisfactory.

Hypertrophy of the Female Mamma. G. T. BEATSON, Glasgow. *Edinburgh Medical Journal,* December, 1908.

Beatson reports one case of this rather rare lesion. The hypertrophy began at puberty and was associated with pain and discomfort in the breast. At the age of 19, the patient menstruated twice, but only very slightly; since then there has been amenorrhea. Eighteen years ago an adenoma of the left breast was removed. Owing to the constant aching pain the patient sought surgical relief; it was thought advisable to remove at first only one breast, for the reason that occasionally in has been noted that removal of one causes diminution in size of the other. As no such improvement took place, the other breast was also removed later. On examination the hypertrophy was found to be due to an increase in the fat and fibrous tissue.

Most cases of hypertrophy of the female mamma begin at puberty and are associated with some sexual irregularity, usually amenorrhea. Some cases are influenced by the use of iodine and thyroid extract, but probably the best course to pursue is amputation. It is advisable at first to remove only one breast in order to note the effect upon the other.

[Although no pelvic examination is recorded in the recital of this case, it is well to state that in the majority of instances of this lesion there is usually associated an infantile uterus.]

A Case of Sigmoid Kidney Operated Upon (*Ein operativ behandelter Fall von Ren Sigmoideus*). WM. WEIBEL, Vienna. *Wiener Klinische Wochenschrift,* November 19, 1908.

A woman of 35 had suffered for ten years with weekly attacks of pain in the right side of the abdomen radiating downward. On palpation a mass was felt beneath the free border of the ribs, round, hard, about the size of a goose egg, and but slightly movable; it was attached by what appeared to be a pedicle, which proceeded from its upper margin. The diagnosis was made of tumor of a prolapsed kidney. At the operation this proved to be a kidney whose hilum was turned outward; it was firmly attached by kidney substance at its upper margin to a normally situated right kidney, which proved to be the pedicle above described; the blood vessels of the lower kidney arose also from the right side of the aorta, but the ureter proceeded over to the left side, passed beneath the sigmoid flexure and entered the left half of the bladder in the normal situation. The kidney on the left side was absent. Acting upon the theory and the attacks of pain were due to pressure by the misplaced kidney on the surrounding organs, the author decided to remove it. This was done with considerable difficulty owing to the intimate union with the normally situated kidney. This lesion is a congenital anomaly. Only two cases have been previously reported.

The Value of Turpentine in Gall-Stone Operations. GASKOIN WRIGHT, Nablus, Palestine. *British Medical Journal,* December 19, 1908.

On a woman of 54, who had been suffering for several months with fever and suppuration of the gall-bladder, cholecystostomy was performed, and the gall-bladder, which was full of stones, was cleared out. A large mass of impacted stones was found lying apparently in the ductus choledochus, but, on account of the adhesions round the gall-bladder, etc., the duct could not be properly exposed. A spoon was passed three inches or so through the cystic duct, but the stones could not be removed, and they were so hard that it was impossible to break up the mass or to make any impression upon it.

A piece of indiarubber tubing was fixed on a small glass syringe and 1 drachm of turpentine injected through the cystic duct on to the surface of the impaction. In a few minutes Wright was able to break up the impaction, and in about ten minutes all the stones were removed from the duct. The patient made an uninterrupted recovery, the opening in the gall-bladder healing up in about six weeks.

From his experience in this case it seems to Wright that the habitual use of turpentine in connection with cases of choledochotomy in which there is the slightest difficulty in removing the bile concretions might materially lessen the risks of the operation.